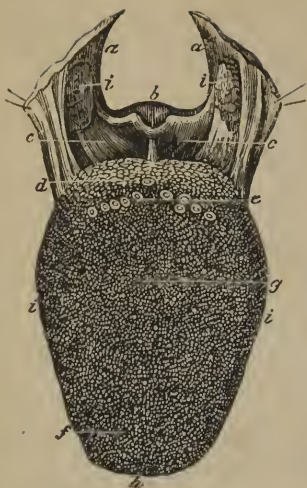




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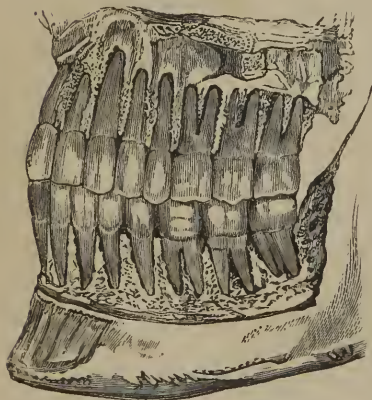
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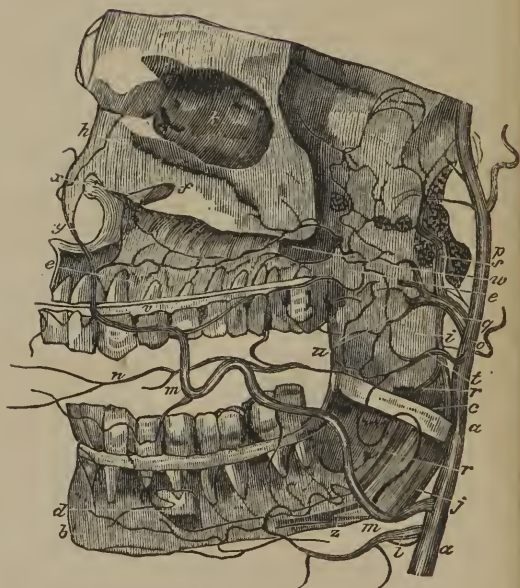
ORGANS OF SALIVATION.



FIRST DENTITION.



PERMANENT DENTITION.



BLOOD-VESSELS OF THE MOUTH.

A TREATISE

ON THE

DISEASES AND SURGICAL OPERATIONS

OF

THE MOUTH,

AND PARTS ADJACENT:

WITH

NOTES OF INTERESTING CASES, ANCIENT AND MODERN.

BY

M. JOURDAIN,

DENTIST, AND MEMBER OF THE COLLEGE OF SURGERY.

TRANSLATED FROM THE LAST FRENCH EDITION.

Usus, atas, tempus aliquid apportet novi
Ut que te modo scire credas, nescias.—MANGET.



PHILADELPHIA:
LINDSAY AND BLAKISTON.

1851.

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P R E F A C E .

THE Translator began this work with the design of adapting it, by suitable additions and corrections, to the present wants of the Dental Profession. This design he has carried out through the first hundred pages. But he soon found that either the necessary additions would swell the work beyond a reasonable limit, or that they must be made at such expense of the original, as virtually to destroy its character as a translation. He has, therefore, throughout the rest of the work, aimed simply at a clear and concise expression of the meaning of the original, avoiding comment even where he could not coincide with the author in his theories or mode of treatment.

Those familiar with the original will find that certain remedies long since removed from the *Materia Medica*, and sundry expositions based upon the theories of the older humoral pathologists, are omitted. The reader is notified where the omission or abridgement is considerable: in other cases no allusion is made, nor does the Translator think any apology necessary for passing over that which could possess no interest except as a curiosity of medical literature.

The plan of the original work is admirably suited to the Dental Surgeon, covering, as it does, the entire Nosology of those parts of the body to which his attention is especially directed. The Author himself tells us that he has only commenced a work, which it remains for those who come after him to perfect. We should, therefore, not judge him by the light of the present advanced state of medical knowledge, but seek rather to follow in the path which he has marked out. A work upon the same plan, embodying all the modern improvements of the art, would be of inestimable value to the Dental Surgeon. Until such shall appear, this work by Jourdain has the merit of being the only single one which covers the whole range of Diseases to which the Mouth and its Adjacent Parts are liable.

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T R E A T I S E .

INTRODUCTION.

THE Surgical Diseases of the Mouth, if studied with reference to their causes, their nature, their varieties, their progress, the parts involved, the period of life most subject to attack, and also the operations and modes of treatment demanded, form no small part of the art of healing. They demand not simply a general, but a special and careful consideration; else will the routine practitioner expose these affections, either to dangerous operations, or to a course of treatment, tedious, useless, and it may be, hurtful. Instead of curing the disease, he will but add to the list of ills.

These diseases often involve the eyes, nose, roof of the mouth, soft palate, uvula and tonsils; originating, in such case, usually in the upper jaw, the osseous structure of which they destroy. Those of the lower jaw may affect, directly or indirectly, the gums, the tongue, and all parts connected therewith. In short, these diseases of either jaw frequently extend their ravages to the ears, the cheeks, the neck, &c., causing, in their progress, the loss of sight, hearing, smell and taste, impossibility of deglutition and articulation, and, in very many cases, death. Though these various accidents often occur as the cause or consequence of these diseases, we must admit that the same results do not always follow with equal certainty and quickness: partly for the reason, that we cannot always fully understand the real disease we are contending against; and partly because we become so habituated to a routine of operation and treatment, that we suffer ourselves to be blinded by the success with which chance sometimes favors us.

The various parts, which are the seat of these affections, often present difficulties to the surgeon, great and at the same

time most instructive—instructive in the operations required, and in the consequences always resulting—in the treatment demanded and also in the medicines administered, having due reference to their nature and operation. The rules laid down for the general treatment of surgical diseases in other parts of the body, can be by no means equally and indiscriminately applied to those of the mouth. For instance, the difficulty of arresting certain hemorrhages, from the impossibility of applying effective and permanent compression; the fear lest certain corrosive applications should be dissolved by the saliva, pass into the œsophagus, and thence into the stomach; the position of certain parts requiring an operation; finally, the difficulty of retaining a dressing, and the diminished effect of medicines, weakened by solution in the saliva and other fluids of the mouth—all present so many obstacles to be overcome in the treatment of surgical diseases of the mouth, which are not to the same extent met with in other parts of the body. If, moreover, regard is had to the nature and structure of either of the maxillary bones, and their differing degrees of ossification, varying with the age and with the seat of the disease, no impartial man can fail to be convinced that, unless to a knowledge of general principles be added a special attention to this particular branch of surgery, there will be a liability to error in the operations and treatment required by these diseases. And although some, prepossessed by a bought title, which seems to give them advantage, maintain, without the trouble of a correct investigation, the contrary opinion, daily experience appeals from their decisions. The pertinacity with which they maintain their paradoxes, reveals more of self love and personal interest than of real attachment to the good of man, or the progress of art.

Doubtless it will be argued, which I admit, that surgery has not lost sight of the diseases of which I at present attempt to treat. But that this objection may have full force, it will be necessary to see if one single work can be found, in which there is a complete and consecutive description of the causes, immediate and remote, of these diseases; of the various operations required; and of the different plans of treatment, as modified

by the circumstances of each case. On this point I fear no contradiction, unless any one should thus regard those scattered observations, which may be found, here and there, among a number of authors—observations of which he knows not how to avail himself, and which, presented in such form, cannot possibly fulfil the desired object. I presume no one will venture to regard as complete treatises, those dissertations, if I may so term them, polemic and separate, which certain compilers have falsely appropriated. So much have they, for the most part, altered and disguised facts, that unless the text be collated with the original, one may very easily be the dupe of his good faith.

Freed from all prejudice, I seek earnestly the advancement of Art; and though confident that the treatise, however irregular, which I am about to present, will throw some favorable, though faint, light upon the department of surgery which I have chosen, I confess that it is still but the feeble twilight which precedes that bright day that shall unerringly guide in the path of real knowledge. In this spirit have I undertaken that work of tedious labor which others seem to have passed over. May my weak efforts redound more to the progress of the curative art, and to the good of humanity, than to my personal aggrandizement. If the many surgical treatises, even the most complete, and the separate observations and monographs have failed in doing justice to their subject, still less explicit are the works of Surgeon Dentists. Each of them may very possibly have made passing mention of facts possessing real or apparent interest; but not one of them has given us a complete treatise, general or special, which may be said to have a direct and essential bearing upon what are commonly regarded as the surgical diseases of the mouth, and upon their operations and treatment. The *Surgeon Dentist*, by the late M. FAUCHARD, though undoubtedly a work deserving the highest praise—and having so many, oft times, faithless copyists—containing observations and researches upon all branches of the dental art, is at best, but an original, forcible and faithful manual of the *mechanism of dentistry*. There is evinced a

superficial surgical knowledge, which, under certain restrictions, may entitle its original author to a kind of reputation. But such works, very useful in one view, cannot be relied upon as safe guides in the acquirement of that real and necessary knowledge demanded in the treatment of surgical diseases of the mouth. Of the truth of what I advance, no impartial and reflecting man can fail to be convinced.

In every point of view, there is, in this branch of surgery, room for labor and long continued study. It especially demands our serious reflection as to the true origin of certain consequences developed; an inquiry which can only be answered after long experience and a careful attention to the writings and operations which celebrated men have left us. First among these, undeniably, must come the writers of antiquity, of antiquity the most remote. Truth the most pure finds, oft times, expression in language the most simple. Modern writers have thrown much useful light on the same subject; but there is ground for the belief that more might have been done, had they labored with closer thought and assiduity, not preferring, as, perhaps, in gratification of vanity, they too often seem to have done, ornament of style before the utility of subject matter, of which, at times, they seem to have altogether lost sight.

Another equally important observation is, that our research must not always be confined to the works which treat of the subject in hand; particularly since, on some of these subjects there is no special treatise. That which seems farthest fetched is often the most applicable, and with the aid of thought and careful study, principles may be justly applied, each to the other. So immense is this chain of the movements of the animal economy, that, when we take hold of the first link, we must gradually pass over all to the end, omitting none, else are we lost. But, inasmuch as this examination should be most thorough, it becomes necessary to divide this chain into many portions, allotting each to such men as are fully competent to their respective tasks, that thus there may be a perfect and uniform agreement in the results of their work.

"It were to be wished," says Chancellor BACON, "that a cor-

respondence could be established between the first artists of every profession. The collection of such different rays would cast a brilliant day over the world of Art. O, estimable conspiracy, if interest and jealousy did not mar it!"

Those societies which some gracious sovereigns have honored with their protection, may seem to fulfil their duty, the intention of these sovereigns, and the views of our celebrated philosophers. But, to answer such just and desirable ends, these societies should know how to connect with themselves, indiscriminately, from the different branches of science, all in whom they recognize an ardent and uninterrupted zeal in perfecting the particular work in which they are engaged. All knowledge which concerns the life of man is ever interesting, come whence it may. The better then to insure this species of associated emulation, no member of such body or society should, to a first title, which gives the right to practice in this or that branch, or the whole, if he may see fit, append a second which is a whit the less honorable, or is ever conferred on other than real merit, the proof of which shall be found in continued toil. As to the indolent, let them remain spectators or kind hearers, at the risk of serious trouble, should they seek to appropriate a title which they have not earned by useful and well followed labor. Thus should honor be accorded to zeal and emulation, and then will all branches of art make most rapid advance in useful knowledge. The surgery of the mouth offers a field for research, of sufficient extent to merit the notice of the learned.

This organ, (the mouth,) with its component parts, is often, as is known, the guide to the observant physician and surgeon. Many internal diseases affect this part, by metastasis. Syphilis, scrofula, and many malignant and putrid fevers, here show symptoms, and occasion much mischief. It is well known that certain affections of the mouth are often the precursory symptoms of various disorders of the fluids, previously unsuspected. Mistake in such cases may make life the sad and feeble victim of these diseases, and lead to their complete establishment, unless the operations and treatment be adapted to circumstances. Some cases recorded in this work, will show the force of this truth.

What has now been advanced seems to establish, without appeal, the fact that the surgery of the mouth cannot be fully understood, and will not keep pace with other, better cultivated, branches of surgery, unless there be laid down a fixed principle, for the interpretation and assistance of nature; a system which Chancellor BACON has stated in the clearest manner.

“Man,” says this excellent author, “can explain and aid nature, only so far as he shall understand her by the observation of facts. She can be reached in but two ways: the first consists in proving axioms by experience; the second, in extending our experience by the aid of axioms. The understanding should be the judge, the senses should act as witnesses, and facts should be the proofs. But an observer should always be on his guard against a previous impression, that he be not surprised into error. Facts should be repeated under his eye before he is satisfied.” It might, I think, be added, that it is equally necessary for him to add to these facts of personal observation, those collected by preceding authors, laboring for the same object, in order that he may form a just comparison, from which to draw correct inferences and sound principles.

But this plan, so wise, seems not to have been adopted in the instance before us; at least, if I may judge from the many essays and memoirs which have been presented for some years past. This, any man of the least perception will readily see, if he will only read with care these productions. It arises perhaps, from the fact, that those who have undertaken to treat upon these different matters, have not, in this branch of surgery, a well digested theory or a sufficient practice; or, perhaps, it is because these writers have never seen these diseases in full force, when so distinctly marked as, by no possibility to be mistaken, that they have failed to detail the symptoms whereby to recognize, or the means wherewith to arrest, their first development. Add, also, a too great reliance on their own judgment, in subjects presented to them, and lastly, a dread, both of the fatiguing application which is demanded in many cases of patient research, and of the necessity which is incumbent on every one who writes for instruction, so to perform his task,

that his readers may not be left to vascillate in dangerous indecision, or adopt with pertinacity false or dangerous principles. The only way to avoid these annoyances, is for each one with candor to know his own sphere, and never treat of subjects with which he has not familiarized himself, first by profound study, and then by a series of sufficiently numerous experiences; until, in fine, by force of time and care, given singly to the one object, he has forged out a chain of facts, to which he may continually add, in the pursuit of new truths.

The advantages, of which I have spoken, to be derived from a close and continued study of each individual department of surgery, are in no wise chimerical. "Man," says Mr. HUME, "is a creature of reason, and science is his proper food and nourishment; but so narrow are the limits of his comprehension, that he can hope to derive little satisfaction from either the extent or the certainty of the knowledge which he has gained. Thus it is evident that man, correctly estimated, is not possessed of universal capacity, and that his range of perception is very limited in this his attempt to scan the whole of the great system of Nature. Much of his knowledge will necessarily be obscure or superficial, and it is impossible that it can be, even in part, perfect, unless he shall exclusively devote himself to some single pursuit." This *universal Nature* should, in truth, be the study of both Medicine and Surgery, two sciences which have ever been looked up to as the sole resource of suffering humanity, feeble and failing; but it should be so sub-divided that each branch may receive that special and close application necessary to a thorough knowledge, and the securing of any advantageous result. A single department is enough to occupy the entire life of one man. These reflections are suggested by the consideration of the responsibility before me. Those men, in fact, who have gained a reputation in their art, before almost the entire world, have confessed themselves more thoroughly acquainted with some topics than with others. Such is the character of the true scholar; modesty should be his garment. To this most praiseworthy virtue are we indeed indebted for some excellent works on anatomy, its first principles, suppurations, midwifery,

diseases of the mouth, eyes, &c. But a good judge may readily see how deficient in experience the observations of these same authors become, when they attempt to extend them beyond their sphere. He may plainly see their embarrassment, and the necessity, more than once occurring, of recourse to theories and hypotheses, in order that, in the proof of their position, there may not be too evident a defect. Their observations become superficial, and are productive of far more evil than good, because they serve for a shield to certain men, who would be thought very profound, while in fact, they are merely clothed with an exterior as false as it is imposing. These defects, so perceptible in the works of writers on general surgery, are even more palpable in those which relate to the treatment of diseases of the mouth.

Devoted from earliest youth to the study of surgery in all its departments, I enjoyed for many years the advantage of seeing the practice and learning the principles of one of our most illustrious masters—a man justly celebrated for his talent, and, for his beneficent zeal, well worthy of the confidence and esteem of all. Yet, I confess, the extent of the field of surgical operation startled me, and I set before me all the difficulties I should have to surmount in the attempt to pass over it all. I thought of my weakness, or, in other words, I distrusted the extent of my observation, and I could not but remember the importance of the obligations which I had, unconsciously as it were, assumed to my fellow citizens. Thus, after serious reflection, and with the advice of some wise and distinguished individuals, I deemed it my duty to confine myself to a single department of the Healing Art—the Surgery of the Mouth, and investigate it with a care and assiduity which, it seemed to me, had not as yet been bestowed upon it.

What I had read, seen and understood, excited not so much my admiration as my curiosity. But all this answered not to the plan of study which I had laid down. Spite of the eloquence and brilliancy of my instructors, I could not discover that unity and connection in the facts relative to diseases of the mouth and their necessary management, which I desired—a

great deal of general, but little of definite, import. The order observed in the public demonstrations convinced me the more that each man should confine himself to his department, if he wished to derive any real advantage from his knowledge. In fact I noticed that each lecturer had always in view some one object, and thus he was enabled to develop it in the clearest manner; but the subject which most interested me had been always too lightly noticed to answer my views.

In this dilemma, I could see no better plan than to devote myself to a thoughtful perusal of the works of ancient authors. The immense volume of their labors and personal observations convinced me of the error of those who, to excuse their own indolence, were wont to assert that a man in extensive practice could find no time to write. An attentive reading of those works which are the result of a long practice, will show the difference between principles drawn from facts, and those based on theory, unsustained by practice; and it will also appear that in every age, distinguished men and practitioners the most engrossed, have found moments for the collection and publication of their thoughts. The great number of facts recorded in these works of our first masters, disclosed to me another error on the part of those who pretend that they can make books *from books*. No doubt they can servilely copy all that may come to hand—become, in a word, tiresome gazetteers. Of course no man can expect to furnish altogether from his own resources, the material for an elementary treatise; but if he avail himself of the experience of those who have preceded him, directly appropriating it to enlighten and guide him, it is a palpable theft. The proper course is, after selection of the authors to be examined, to find what each has to say, thoughtfully to distinguish the true from the false, and not to be led astray by first impressions; to shun, in a word, the remodeling and perpetuation of error, which he should rather combat and overthrow, clearly, effectually, and with a steadfast regard to truth, and to the best interest of his cause. Such is a legitimate use of those books which we may call to our aid. Here is no manœuvring of the plagiarist, but the toil of a strictly scrupulous

examiner, who desires neither to deceive his readers, nor to be himself deceived. The writer who shall impose this law upon himself, will find many works, certainly, which he will approve, others which he will entirely reject, nor will he pause till he shall have consulted all who seem likely to clear up his doubts, to give weight to his opinions, and to establish firmly the foundation upon which he proposes to build. Judge then, if, after all this, it be so easy as some think, to make books *from books* !

Such has been the plan of authors of even the most remote antiquity, and also of some of the present day. Many among them there are, physicians in extensive practice, and yet indefatigable writers, faithful and reflecting observers, rigid and dispassioned critics; men bold without rashness, as correct in the issue as in their progress. These are the men whom I have chosen as guides in the work which I now offer: and if tediousness and prolixity of formulæ be the only fault brought sometimes against those who, yet to this day, deserve our esteem and attention, may we not more justly blame the neglect and want of interest which is so often visible in more modern writers? Besides, we must not do the ancients injustice here. Consider the time at which their works were published. Perhaps they might not have been so scrupulous, or if you will, so minute and apparently prolix, could they have been so happy as to foresee, that in proportion as man became engrossed by personal interest, self-advancement and pleasure, he would lose sight of the responsibilities of his station. It is impossible to be blind to the obligations we are under, in every way, to the ancients. Look, moreover, at the progress of knowledge in any given space of time, as handed down to us by them, and compare it with the progress in the same space of time at any subsequent period. Much may be improved, but there has been little discovery of new truths, while some very useful ones may have been quite forgotten—particularly in relation to diseases of the mouth.

Every one who essays anything original upon science in general, has resource to these fountain heads, either secretly or

with open candor. These same fountains are sending forth, their healing streams to present times, and are felt within these walls, where weak and suffering nature has need of a skilful hand, effectually to root out the germs of change and death, which often invade the life of citizens more useful to the state than idle wealth. In the full conviction of the advantage to be derived from the works of antiquity, I have given much attention to the selection of all that could be useful, to the exclusion of what was irrelevant. With this discrimination, I have aimed at a translation, pure, simple, yet faithful; and have thought I ought to place their various opinions side by side, and to them add my own. Some interesting cases and well digested observations, some tables, strikingly expressive of the changes of the animal economy, arising from age or from sex, seemed to me to deserve notice, and consequently have a place in this work. But these rich stores were only in my mind a confused heap of material, demanding from me a suitable arrangement. Besides these, many hints and observations, found in the writings of some modern authors, in some memoirs, and in special notes, sent to me by men of rare merit, also extracts from the collections of academies of distinction, contributed to my supply; yet all was, as one may well suppose, only a shapeless mass, and I found myself encumbered by my wealth; still I endeavored to make the best use of it. Happily, several physicians and surgeons of the highest reputation, to whom I made known my plans, offered me the aid of their advice. In the friendship with which they honored me, I found them scrupulous judges, more considerate of the public weal, than desirous to minister to my personal vanity. Such was my respect for their advice, that had they urged me even to the abandonment of the work of so many years, I should have yielded; but, so far from this, they used every suitable expedient to encourage me in my moments of depression, in the midst of so laborious an undertaking. They convinced me of the necessity of stripping off the cloak, as it were, in which the surgery of the mouth had heretofore been enveloped; and that, though it might not bring to me unmingled happiness to have thus put

the finishing touch to this branch of surgery, yet there were men who preferred the interest of humanity before all other motives, and these would assuredly be gratified with my efforts.

The accomplishment of my plan involved more extended labor than one might perhaps imagine, more than I had at first anticipated; and I found myself compelled, in conformity to my arrangement, to divide the work into two volumes. In the *first* I have treated of the Superior Maxilla with its adjacent parts; in the *second*, of the Inferior Maxilla and its connections.

Notwithstanding the size of the present work, I trust I shall seem to have avoided all useless detail, and that the cases which I have reported will appear necessary, not only as proving the principles which I have here drawn from the authors whom I have consulted, and from my own experience, but also as bringing to light many facts lost in the lapse of ages—facts which it may be interesting to collect together for the purpose both of guiding in the cure of cases, actually, so to speak, unknown, and to present a complete table of disease. In these tables one may, at a glance, recognize, understand, and correctly judge of a disease, without the necessity of hastily searching, for this purpose, through a number of authors, of whom some may make only a casual allusion to it, and others give a description too concise to afford any sure guide. Still, if there are those who wish to enter upon fresh researches, there is abundance of material; I have sought to avoid repetition.

The maxillary bone forms the greater part of the upper jaw, considered in its full extent. This bone differs from most others, in presenting, on each external lateral surface, a kind of inflation, formed by the elevation of the external lamina of the bone, which seems to be at some distance from its substance, but touching it around its entire circumference. This separation forms a cavity on either side, termed the maxillary sinus, which is the seat of a number of diseases, a full account of which will be found in the first volume of the work.

I have thought it necessary to a clear idea of the structure of this bone, to give, in chapter *first*, a general description, and

trace it from birth to puberty, noting the progressive changes, the increasing thickness of parietes, and the gradual diminution of the cavity, as varying at different ages. I note also, in this chapter, the extent of these cavities, their position, the teeth in immediate relation, their opening into the nasal fossæ, and the vessels which supply them ; also the tissues which line their interior, their uses, and the admirable expedient which nature adopts, to throw off the superfluous mucilaginous and mucous secretions, a proportion of which is necessary to keep the membranes pliant, and preserve the glandular secretions in healthy action. Lastly, I have added to these details the results of varied anatomical observations, which will serve in part to illustrate the process of nature, which oft times cannot be understood till after the close of the disease, but which I thought ought to be made clear, in order to draw thence useful hints for practice.

I have already shown that the Diseases of the Maxillary Sinus have long been too much neglected : that is to say, practitioners have been content with the many cases recorded by different authors, without thorough investigation, or any attempt at a classification, which might give some fixed and certain method of treatment. For this reason, I determined to make diligent search from the time when surgery seemed first to take the subject seriously in hand. In pursuing this examination in chapter *second*, I have had recourse to all the works which have appeared, and have come to my knowledge, from that time to the present. I have thought it proper, in the examination of these works, to speak my opinion, without respect to persons. Every one, who writes for the benefit of his fellow citizens, should exercise, above all things, impartiality. Cowardly assent becomes a crime ; and when truth, and the advancement of an art so useful as surgery are the impelling motives, it is only those who are beneath criticism, that such an one will offend. It is only in the absence of passion, jealousy, &c., that any analysis of facts can be made, which shall throw new light on the subject. A proof of the indefiniteness of the knowledge of the diseases of the maxillary sinus, is their varied nomen-

clature. I have, in chapter *third*, examined these different names, assigned the correct ones, and have given them a proper classification, persuaded that there is no other way of removing ambiguity, and reconciling differences among authors.

Chapter *fourth* is divided into two sections. The first treats of the causes, symptoms and characteristic signs of the various affections of the Antra, placing new truths under their most appropriate heads. The second is devoted to a general consideration of inflammation, how it should be viewed, whether internal or external, and what may be its cause. Inflammation, it appears to me, is not a real and distinct disease, but a predisposing symptom of some true affection, the nature of which is more or less speedily developed.

The treatment of inflammation is so well known that it need not be dwelt upon, so that here I have been very concise. But inasmuch as this primary formative state of a disease ought to command the attention of the surgeon, and suggests useful hints for whatever operation may be necessary, I have thought this the proper point at which to introduce the different modes of treatment proposed, by various authors, for the cure of the diseases of the maxillary sinus.

If we examine carefully the many opinions on this subject, we cannot fail to see how uncertain this department of surgery yet is, and how constantly principles are advanced, at variance with the nature of the disease and daily experience. Some writers contend that after the extraction of the teeth, which, they assert, are the cause of all the mischief, the cure should be left to nature. Some urge complete extirpation; and these have followers, some of whom make a boast of going to still greater lengths than their masters. In fine, every single indiscriminate rule of operation in all these diseases, has its advocates. It is evident, from this slight sketch, that this variety of procedure arises, first, from the too great prevalence of a systematic theory; secondly, from the fact that modes of practice, adopted on the faith of others, have not been sufficiently understood by those who have thus adopted them; and, lastly, from inattention and misconstruction, in certain cases, of the true organization of

bone, in consequence of which, they have confounded true purulent depositions with tumors, which discharge, when opened by the operator or otherwise, a lymphatic fluid, resembling a dropsical discharge. This is the subject of chapter *fifth*, in which I also show, by facts adduced in proof, that each disease has a distinctive character, which demands a variation in the treatment.

Irritation and pain are invariable signs of inflammatory disease. These symptoms are, in the maxillary sinus, as in other parts of the body, indications of this or that disease, and vary, in progress, degree and results, with the causes that give rise to them. After fully discussing these points in chapter *sixth*, I have established the proper treatment by a detail of cases, and a practice mostly original.

The phrase *retention of mucus*, used to characterize most of the diseases of the maxilla, seems to me to be too commonly used. While admitting the possibility of this affection, in certain cases, I have endeavored to point out its characteristic signs, and for its cure, when not complicated with other affections, I have given incontestible proof of the efficacy of a new method, the credit of which has been disputed with me, but envy has been forced to do me justice. This method certainly deserves preference before those previously employed, when the disease was imperfectly known. This forms the substance of chapter *seventh*.

Certain canals are subject to constriction, others to complete obstruction, the cause of which accidents it is impossible always to find out. This point in practice has not yet been attained. I have in chapter *eighth* shown that the natural openings of the sinus, on either side, into the nasal fossæ, are not free from these liabilities, and have also demonstrated, by facts, the possibility of restoring them to their normal condition.

Chapter *ninth* treats of lymphatic secretions of the maxillary sinus. I have noted the difference between the symptoms in these cases and those of purulent deposits, and after an attentive examination of the character of these two depositions, I have determined to term all cases, in which an ichorous, serous

fluid is secreted, *dropsy* of the maxillary sinus. This has necessarily led me to consider the means proposed for the treatment of this form of disease, hitherto not sufficiently studied, and see if they are admissible. I have proved, by well known and indisputable facts, that the suggestions heretofore offered for the cure of these lymphatic depositions, have not been sufficiently well weighed ; and it were surely better to say nothing, than to promulge a dogma which must reflect more disgrace than glory on the art, and which might prove dangerous in the hands of the imprudent. It should be borne in mind, that in these diseases, the bone is simply distended and softened. I have thought it necessary to allude to this distension ; and on this point have added in the same chapter, some reflections, which I submit to the judgment of my readers.

Many of the diseases of the upper jaw approach the maxillary sinus, without involving it ; and the many fruitless operations which have been hazarded upon these cavities, that might have been avoided, have induced me to examine, in chapter *tenth*, the difference between suppurations within the cavity, and those which have their seat in the osseous structure of the maxilla and alveolar process. The cases adduced will prove the truth of the principles I have established on this part of practice.

Collections of matter in the maxillary cavities may occasion external fistulas, and on the other hand, these fistulas, at first independent of the sinuses, may extend to them. Chapter *eleventh* furnishes instances of such complications, and the most reliable remedies.

The antra seem at first view well protected against blows, shocks, or any external violence, yet they are not unfrequently exposed to such accidents and the consequences resulting. Chapter *twelfth* contains an extended detail of these accidents, illustrated by many interesting cases.

Chapter *thirteenth* contains an account of some of the consequences of certain forms of abscess.

The maxillary sinus may be the seat of polypus and true fungus. I have in chapters *fourteen* and *fifteen* explained the difference between these two species of tumors. The best au-

thors have been consulted as to the proper conclusions to be formed respecting them, and I have established, by a sufficient number of cases, the best treatment of these formidable diseases.

In chapter *sixteenth*, I treat of cancerous and carcinomatous tumors, and here I present some altogether new ideas. I have endeavored to point out to the reflecting surgeon, the best way to avoid mistake, and have adduced many instances to assist him in his prognosis of these malignant diseases.

Chapter *seventeenth* is devoted to exostosis of the upper jaw, and contains a rare and singular case of this malady.

Fistula lachrymalis, some affections of the teeth, and even of the eye, may, in their progress, involve the maxillary sinus, and so, by metastasis, may some other diseases. This forms the subject of chapter *eighteenth*, in which I have inserted practical details, which will add much to the knowledge necessary to a proper treatment of these diseases. It will, I trust, be found that I have given them with sufficient explicitness and detail. There is nothing to prevent those who may labor after me, from multiplying facts in this department of the art of healing.—There remains, indeed, a vast field of discovery before those who are willing to devote that time and diligent thought which plainly has not heretofore been given.

Chapter *nineteenth* is occupied with a consideration of scirrhus tumors of the upper jaw, not involving the maxillary sinus. I have here pointed out the surest method of destroying these obstinate affections and have shown what caution they demand, lest they should assume a malignant character, and thus become frequently incurable.

The most ancient writers, as well as the most distinguished of our day, have recognized the possibility of fistula and abscess, in the substance of bone. Whether it be that these latter have had recourse in the support of their doctrines to the former, as might seem from a comparison of the different writers on this subject, or that the same truth is often revealed to each diligent investigator, there nevertheless results this unity of testimony. This truth is clearly proven in the case of the maxillary bones. In the *twentieth* chapter I have given instances of

fistula and abscess, involving the osseous tissue of the maxilla, more or less remote from the sinus, and in the proposed treatment, have had due regard to their position and direction.

The palate is formed chiefly by the apposition of the two superior maxillary bones, for which reason the processes of these bones thus coming together are termed palatine. [The posterior fifth of the palatine arch is formed by the apophysis of the palate bones.] The *twenty-first* chapter, in which I commence the exposition of the diseases of this part, is divided into four sections. The first treats of the exciting causes of these various affections; the second, of their diagnosis; the third, of the great importance of a correct understanding of these causes; the fourth, of their effects, as modifying the character and peculiar nature of the affection. After these preliminaries, which I have thought necessary, in order to remove many prejudices existing in relation to their treatment, giving rise to measures more or less disagreeable, often useless, and sometimes injurious, I have, in the *twenty-second* chapter, entered upon the subject of caries, dividing the chapter into five sections. In the first section I give the symptoms of caries, with the opinions of the authors who have written on it, and have proved that the ancients had a correct appreciation of this affection; thus removing, by this exposition, a reproach which some modern writers have unjustly cast upon them. External signs are not always sufficient for ascertaining the existence of caries. In some cases it will become necessary, for the removal of his doubts, that the surgeon have resource to an operation, which, from the close relation of the bone to the surrounding and investing parts, and from its own inequalities, intimate structure, cavities and canals, will require the greatest caution. Then, in section second, I have, I believe, clearly shown the necessity of not losing sight of the age of those who are the subjects of this disease. These details have insensibly led me to discuss different forms of caries. The remedies suggested are deduced from the experience of the most celebrated of ancient and modern times, and are such as my own practice assures me are most efficient. The fourth section is occupied with indurations of the palate, and of the different

surgical operations admissible. The most ready and sure method of healing wounds of the palate, forms the subject of the fifth section. At the close of these sections are placed twenty-six cases of caries of the palate, in each of which is illustrated some one of the predisposing affections above mentioned. I have also made mention of hemorrhage of the palate, and contrived for its arrest an instrument, in which I have made some useful improvements, and which will be found described at the end of this volume. I have also contrived another for the arrest of hemorrhage after the excision of the tonsils. I close the chapter with some remarks upon hare-lip and congenital fissure of the palate.

The *twenty-third* chapter treats of surgical diseases of the veil of the palate, the uvula and the fauces. This chapter is divided into four sections; ulceration of the throat is the subject of the first; abscess of the second; scirrhus, cancer and carcinoma of the throat, the subjects of the third; and of the fourth, diseases of the uvula and soft palate. These sections are followed by many interesting cases. Lastly, I have closed the first volume by a report of eighteen cases, so singular in the character and variety of their complications, that they could not properly be classified with the contents of this volume.

After having been thus engaged for the most part with such diseases of the upper jaw and its adjoining parts, as specially demand the aid of that branch of surgery which I practice, I thought proper to pursue the same plan with the affections of the lower jaw and its neighboring structures. This second volume of the *Surgical Diseases of the Mouth* contains seventeen chapters, each divided into as many sections as their subject matter seemed to call for. To be sufficiently clear, and at the same time avoid repeating what has already been written in the first volume, I have thought it advisable to compare the diseases of one jaw with the same in the other, and show the difference of treatment demanded in the latter, in consequence of the structure and arrangement of the parts, the readiness with which matter formed may escape, and the advantages and disadvantages presented to the surgeon in operations, or in the

administering of medicines. After this comparative analysis, I divide the *first* chapter into three sections—one on abscess; a second on ulcers, and a third on fistula—and have given facts in confirmation of my practice.

Tumors are divided into inflammatory, indolent, hard and soft; and in the four sections of chapter *second* I have spoken of each of these, and given their appropriate treatment. Most of these tumors, when arising from vitiation of the humors, or when neglected, may involve the maxilla, and induce in it caries, necrosis, exostosis or spina ventosa. Many interesting details and cases will be found on these subjects in chapter *third*.

When speaking, in chapter *fourth*, of wounds and fractures of the inferior maxillary, I have not thought it necessary to take up the subject of fractures in general; I have not even mentioned luxations, as these are not in my department. But while thus confining myself strictly to my province, I have not disregarded the many interesting observations, of which no surgeon dentist, or student of general science, should be ignorant.

Chapter *fifth* is confined to diseases of the lips, such as ulcers, and the specific tumors to which they are liable. These affections occupy sections first and second. In the third and fourth I speak of hydatids of the lips, about which some authors are silent, others confound them with tumors of a different kind, and others again speak of them as diseases peculiar to the poor, having never consulted on this subject the very lucid and instructive Dissertation of BIDLOO. To the observations of this author I have added some others, which I have found of much use.

In running over what belongs thus peculiarly to the lower jaw, I have thought best to treat in chapter *sixth* of the diseases of the cheek, which may be considered as belonging equally to either jaw. As the alternative was presented, I preferred, in order to avoid repetition, to consider it in this connection.

The chapter is divided into five sections: first, abscesses; second, ulcers; third, fistulas; fourth, specific tumors; and fifth,

cancerous tumors. I have avoided too extended a description, and the observations I have added will, I think, throw sufficient light on these diseases.

In speaking of fistulas of the cheek, I have thought it necessary to treat separately of salivary fistula, and to this subject have devoted the *seventh* chapter. I have there given an analysis of the methods proposed by the best authors, to whom, in my need, I had recourse for elucidation, and have also proved, by examples, the success of certain new plans suggested for the closure of these fistulas, which are often a stumbling block to the art, and which, under certain circumstances, become much indurated.

Nearly all Dentists, properly so called, who have written of their art, make mention of some affections of the gums. It is no part of my intention to appropriate to myself their labors. But though I may have profited by the light which I have occasionally found, it will be seen that my plan and arrangement are essentially different. I have given in chapter *eighth*, devoted to diseases of the gums, a general idea of their causes. From this I pass, in sections second and third, to abscess and fistula of the gums; and in section fourth to internal abscess of the teeth, and its effects on the gums. Under this class of excrescences are comprised, epulis, sarcoma and sponginess of the gums—these occupy sections five, six and seven, and in the eighth I make mention of scirrhus and cancer.

From the general diseases of the gums, I pass to the specific; and these form the substance of chapter *ninth*. There will be found a description of erosion and scrofulous sloughing of the gums. I have shown that this last named disease was well known to the ancients, for they have detailed many interesting cases of it, and in other places have written on it many satisfactory dissertations, such as must convince any candid man that they had seen and treated this affection in persons of every age, from infancy to puberty, at which latter period some have ventured to deny that it has ever been seen. In justice to the memory of these great men, I have been compelled to enter into an unavoidable discussion. I have quoted some cases

which seemed necessary to establish this point in surgery, and have given such others as my own practice has furnished. Section third is occupied with conjoined suppuration of the alveoli and gums. This disease has heretofore been the victim and support of charlatanism, from the fact that none have ventured to place it in its proper light. The details I have here entered upon I find in no work except a previous one of my own, but even there much less complete than in these pages. It will be seen that the treatment proposed is neither useless nor improper. I have had recourse to medicine for the removal of the constitutional causes, while to the surgeon belongs the local management. Charlatans may cry out that I seek to narrow their field of operation, but I cannot, for their pleasure, countenance imposture. Section fourth contains hints on, and some particular cases of, hemorrhage of the gums.

The subject of chapter *sixth* is diseases of the tongue. I have given, in the first place, a general outline of these diseases, and then divided the chapter into eight sections. The two first are confined to sores and wounds of the tongue; the second, to its irregularities, depressions and enlargements, and their causes; the third, to the congenital or accidental loss of the tongue, with its effects on speech; and the fourth, to abscess and simple tumors of this organ. The fifth section treats of melicerous, and the sixth of scirrhus tumors; the seventh and eighth, of the cancerous, carcinomatous and fungous ulcerations to which the tongue is liable. To the cases which I have reported of each of these affections, will be found added some interesting discussions, which could not be omitted—points which it would have been ill advised to pass over in silence.

Chapter *eleventh* is devoted to an exposition of the opinions of various writers upon the origin and true character of aphthæ. I have here introduced a Dissertation by KETELAER, as it seems to me the best upon this disease extant. I have, in my translation, preserved the statements of the author, and have confirmed them by others, which cannot fail to establish with certainty the treatment most proper in this affection, which occasionally assumes an epidemic character, and attacks indis-

criminally young and old. Ranula (termed also by the French *grenouillette*,) forms the subject of the *twelfth* chapter, and is illustrated by many cases.

The *thirteenth* chapter treats of diseases of the frænum. The first section points out the best method of performing the operation of clipping, the cases in which this operation is inadmissible, and the precautions necessary to avoid certain accidents, of which I give examples. In the second section, I speak of fungus, scirrhus and fistula of the frenum.

Foreign substances are often introduced, or collect in different parts of the body. The tongue, as I have shown in chapter *fourteenth*, is not free from these accidents. From these may result hemorrhages, from the nose, eyes, ears, and sometimes from the tongue. The remedies proposed for this last hemorrhage are of difficult application, and frequently useless, in consequence, not only of the inability to secure the tongue, and apply effective compression, but also from the pain which the usual dressing causes the patient, and the impossibility it occasions of breathing or of swallowing even fluids, for the support of life. In consequence of these difficulties, some have recourse to styptics, and the actual cautery. These means may be effectual in slight cases, but are usually inefficient in more serious ones, either because the saliva dilutes and alters the action of styptics, or because of the premature separation of the eschar formed by the cautery; the perpetual motion of the tongue also renders peculiarly difficult the arrest of hemorrhages of this organ. These difficulties were before my mind. And besides, while some have acknowledged that the inventions proposed for the arrest of hemorrhage of the tongue are insufficient, they have been content to stop there, and rest satisfied with the means above mentioned; their confidence arising, as will appear from the reading of the examples given in this book, from the mild character of the cases falling under their treatment.

For the satisfactory settlement of this question, I have proposed an instrument, of which a description will be given at the end of this volume, plate third.* Upon applying it to the

*The plates are omitted in this edition.—Tr.

tongue, it will be seen to embrace it completely, above and below. It may be applied also to the ranine arteries, and has the advantage of permitting the patient to breathe, swallow and even sleep. Yet, notwithstanding the perfection to which I have sought to bring my invention, I do not pretend that it is beyond improvement; it is to gain hints and advice whereby to make my discovery more useful, that I thus make it known. I trust that those who offer their suggestions, will be actuated by that dispassionate urbanity which characterizes the true gentleman, that their objections will be substantial; in a word, that they will meet fact with fact; and on my own part, I will strive, with the aid of such intelligent critics, to discover the defects of my new instrument, to correct them, and give none occasion to complain of my silence.

These hemorrhages form the subject of the *fifteenth* chapter, and in the *sixteenth*, mention is made of hemorrhages occasioned by the extraction of teeth and otherwise. I have proposed a sure remedy, keeping in view what I have proved by the cases cited. In the *seventeenth* and last chapter I have given an account of the development of the teeth in children and adults, not neglecting, in the latter, to mention the wisdom teeth, upon the accidents attending the eruption of which, sufficient attention has not heretofore been bestowed.

Such is the plan of the work which I now present before the public. I ask the indulgence of my readers, and of the scientific community at large. It may perhaps be found that I have not perfected this department of surgery, and that it is capable of still more extended reflection. Yet, if the multitude of the subjects discussed be considered, it will readily be acknowledged that I have given a very sure guide to those who desire useful knowledge, and seek still further information. I shall look with pleasure upon all that is useful, clear and well expressed which may be presented to me, and which can advance this part of the art of healing. About the discussions of those who have sought only to advance and render conspicuous their own names, by every possible expedient, without interest in their subject, or any desire to make really useful discoveries, I

have been careful to preserve the most profound silence. These are but as the lightning's flash, which the wise will not gaze upon, lest their reason should be blinded. The flame of truth is far different from that momentary gleam, which departs on the instant, and leaves no trace of its ephemeral existence.

DISEASES OF THE MOUTH.

CHAPTER FIRST.

GENERAL REMARKS ON THE ANATOMY OF THE MAXILLARY SINUS.

The Maxillary Sinus—called also the Antrum of HIGHMORE—is a cavity in the orbital process [more correctly in the body] of the superior maxillary bone, under the orbit. [It is somewhat triangular in shape, with its four angles] looking towards the malar bone, the speno-maxillary fissure, the infra-orbital foramen, and below towards fangs of the dens sapientiae. It has one, and sometimes more openings, which communicate with the cavity of the nose, between the *superior and inferior turbinated bones, immediately under the arch of the former, and are situated rather backward. The openings vary in form and size, as well as in number. Sometimes each sinus will have but one, and again one of them will have two.

Some have supposed that the maxillary sinus may be sounded in the same way as the nasal canal; but an examination of the position of its opening, will show how different must be the procedure in the two cases. The orifice of the sinus looks from above downwards; that of the nasal canal, lying below the inferior turbinated bone, looks from below upward. Besides, into the sinus there is, in the natural state, but the one mode of access from the nose; whereas, the nasal canal may be entered either by its orifice above mentioned, or through the lachrymal

*Called by later anatomists the *middle* turbinated bone, and so styled hereafter in this translation.

duct. This difference is best displayed in PALFIN.* It would be instructive to read his description of these openings, as given from page 363 onward.

These cavities are not uniform throughout, but broader and more flattened above than below. This peculiar formation gives the better support to the globe of the eye, the inferior plate of the orbit of which corresponds with the vault of the sinus, and is slightly concave, for its better adaptation to the spherical shape of the eye. It will be noticed that when, in consequence of disease of the maxillary cavity, this plate is elevated or depressed, the eye suffers a corresponding derangement.

The antra assume, towards the alveolar ridge, a rounded appearance, presenting externally a large wide protuberance, somewhat spherical and very thin, especially towards the centre, giving rise very naturally to the idea of an inflated bone. They extend forward to the second †bicuspid, rarely farther. It is probable that those instances mentioned, where the canine teeth penetrate the cavity, or where suppuration in it has found vent through the sockets of these teeth, depend upon the rupture or absorption of the septum of bone between the root of the canine and the antrum.

As the sinus advances forwards, it rises, and decreases in diameter at its termination. Above the second bicuspid it is often little more than a kind of canal, much higher than the floor of the cavity, of which the widest part corresponds in the adult to the second molar. In consequence of this inclination from before backward, when the second bicuspid occasions disease of the sinus, other means become necessary for the escape of the contained fluid than extraction of the diseased tooth and perforation at the bottom of its socket.

The teeth in most immediate relation with the maxillary sinus are the molares. The second more than the first, and the third less than the second. When any of the fangs of the first or

*In plate 1 of his *Osteology*, 12mo edition, 1731.

†The translator adopts this nomenclature in conformity to the usage of English and American surgical writers. The same teeth are termed by French writers, small molares (*petites molares*) and by most writers on comparative anatomy, pre-molares.—*Tr.*

second molar penetrate the cavity, it is usually the inner or palatine, from the fact that this is often the longest. The *dentessapientia* do not penetrate into the cavity unless their fangs assume a long pyramidal shape; if they have several roots, these are usually bent and partially curved on themselves. The *bicuspides*, particularly the second, penetrate into the sinus only when their single root is unusually long, or twisted and thrown by the side of the first molar. When the teeth of this class have more than one fang, they are too short to touch the cavity. It is impossible to speak of all the varieties of arrangement here to be met with; I have given those usually observable in the adult. We shall now study the progress of the development of the maxillary sinus.

A modern writer has asserted (in the *Journal of Medicine*, vol. xxxi, page 64) that "the maxillary sinus does not exist in the fetus at birth." I confess myself much surprised at this statement, for I was well convinced to the contrary. But, that I may not be misconstrued, knowing how often suspicion is without foundation, I quote the words of M. PORTAL, physician, who says,* "The sinuses of the face in the fetus of nine months (i. e. at birth) are so small as scarcely to be perceptible, *except the maxillary sinuses, which are large enough to hold a small bean*.† Such authority, perchance, may fail to convince modern authors; some of whom, in fact, seem the most anxious to present that which they have hastily, and sometimes scarcely at all examined. As a necessary consequence, they are often embarrassed by errors, the result of their want of reflection, and too much the offspring of the imagination.

If we examine the position of the maxillary sinus in earliest infancy, and again at the age of seven, and the primary rudiments of the milk teeth, as also those teeth themselves after eruption, we shall be forced to the conclusion that the most of the diseases of this cavity result oftener from some internal vice,‡

*In his *Osteogeny*, vol. i, art. 5.

†This diameter varies; I have seen them so small as to hold only a pea; still they are always found.

‡These diseases, it is well known, may be communicated to the child from the parents or the nurse.

as scrofula, syphilis or scurvy, than from any defect in the teeth themselves. A fall or blow may injure the antrum at this tender age. I have shown how the roots of some teeth penetrate into the sinus; but this never happens with the milk teeth. The crowns of these teeth are scarcely formed and presented above the alveolus, before the crowns of the permanent teeth throw themselves, as it were, from the side of the alveolar ridge, compressing and forming the intermediate substance, which separates them from the teeth of first dentition. This movement, at first imperceptible, soon affects the fangs of the milk teeth, and spreads them on either side, causing them to bend and twist, so as to embrace, as it were, the crowns of the teeth of replacement. It is from this peculiar arrangement that these teeth do not project into the antrum, as do those of adults in the cases mentioned above.

[The fangs of all teeth retain the shape of their first formation, except where incidentally modified by absorption or exostosis. The action of the crowns of the permanent set upon the fangs of the temporary would be to occasion absorption of the latter, and not change of direction. We may here remark that the researches of M. BOURDET render it highly probable that this wasting of the temporary roots is caused, not immediately by the mechanico-vital action of the corresponding permanent crown, but through the medium of an intervening "carneous bud-like body." This body he considers to be a portion of the sac of the permanent tooth, assuming, when the occasion requires, an increased vascularity, and acting as an absorbing agent for the removal, not only of the superincumbent fangs, but of all else that may oppose the egress of the tooth. The peculiar arrangement of the roots, as spoken of by M. JOURDAIN, is given to them at the time of their ossification, for their better adaptation to the pulp sacs of the permanent teeth, then already formed.]

It occasionally happens, from some peculiarity of the alveolar ridge, or of the roots of the milk teeth, or from the firm texture of the maxillary bone, that the fangs of the teeth of replacement, or of the permanent molares, meet with too great a resist-

ance, in consequence of which, they grow from the floor of the antrum, and are sometimes lost in it. I shall present several interesting cases of this kind.

The development of the maxillary sinus, as of all other parts of the body, has its limits. At the age of thirty, the prominent portion of its wall is less transparent than at eighteen or twenty; at sixty, this external wall is of nearly uniform thickness. We may infer, from this progressive ossification, that the diameter of the cavity diminishes as life advances, reckoning from the period when the body ceases to increase in size, that it may add to its strength and compactness.*

The antrum is supplied with *nerves* from branches of the olfactory [1st pair] and from the superior maxillary branch of the fifth pair, [trigeminus or trifacial.] Its *arteries* are derived from the first division of the fifth, or internal maxillary, branch of the external carotid. The larger branches spread usually upon the side of the outer wall of the sinus, and pass in a somewhat tortuous course along the alveolar arch, at the bottom of the cavity. The other branches spread in every direction, and form on the membrane a plexus of vessels, which may be seen in those who have died of inflammatory diseases, accompanied with delirium, etc. [The maxillary artery is, in the present more accurate enumeration, the *eleventh* branch, in order, of the common carotid. The antrum is supplied from below by small branches of the *superior dental* artery, and from above by branches of the *infra orbital* artery, also by other smaller branches given off from adjoining vessels.] Although these arteries are not very large, their section may give rise to fatal hemorrhage, as I have witnessed. What reproach must such a result of imprudence in operating occasion an honest mind. The *veins* of the sinus are supplied by the external and anterior jugulars.

Authors are not agreed as to the uses of the maxillary sinus. Reason and sound physiology, founded on anatomical examination, incline to the opinion that it serves to increase the sense

*This consolidation of the walls of the antrum is made by deposition within the cavity, without any external enlargement.

of smell and the sound of the voice. This truth has never yet been questioned; but the author above quoted, who tells us that the antra are wanting in the fetus at birth, assures us that their purpose is to add to the beauty of the face. If what is written on this point in the Journal of Medicine, vol. thirty-four, will not convince him, I can only refer him to PALFIN and M. BERTIN, in fact to every anatomist; and I am sure if he read them with care, he will find that he has advanced opinions which he has not sought to verify, lest they should prove false.

The internal surface of the antrum is lined by a membrane thicker than the periosteum, to which it is adherent, and of a looser, more spongy texture. A number of glands may be seen, which deposit on its surface a glairy fluid, termed *pituitary*, from the name of the membrane and glands secreting it. The communication often existing between the frontal sinuses and the maxillary, may supply this last with a secretion of mucus. A healthy and due proportion of this fluid promotes the action and uses of this membrane, the spongy nature of which renders it liable to many accidents, as I shall show in course. Nature, mindful of the preservation of her work, ever provides that which shall best tend to this result. The condition of health is dependent upon a due proportion of waste and renewal, constantly going on in the system. The saliva, the cerumen, the perspiration, sensible and insensible, all the secretions, are so many superfluous matters, the continuance of which in the body would prove injurious; in the language of the chemist, a *caput mortuum*, fit only to be cast away. The means employed by nature to throw off these secretions, are well understood. The mucus of the maxillary sinus is constantly exhaled, and as constantly renewed. [Physiologists distinguish between *secretion* and *excretion*. The latter implies the elimination of substances previously existing in the blood, as urea, lactic acid, and the lactates, found in the urine and in the cutaneous perspiration. The former is applied to substances which are produced by a chemical action among the proximate principles of the blood, such as bile, mucus, milk, tears, &c. These latter are again divisible into secretions which are of no further avail in the economy, as

the urine, carbon from the lungs, and perspiration; and secretions which are to answer some given purpose, as milk, bile, semen, etc.] Instances are frequent where the retention of this excretion, consequent on the closure or obstruction of the openings of this cavity, has given rise to very serious accidents.

Palfin, and after him most others, have thought that the secretions of the antrum could be voided only in a certain position of the head—lying on the right side to evacuate the left antrum, and *vice versa*. The idea is plausible; but in this case these cavities could, ordinarily, be emptied only at night; and, apart from the absence of proof, a reference to the structure of these parts, and the glutinous nature of mucus, will show the insufficiency of these positions of the head to accomplish the purpose mentioned. 1st. The natural opening is on the side of the posterior part of the nasal canal, which is not so low as the floor of the sinus. 2dly. The opening itself is considerably above this floor. 3dly. This floor passes obliquely backward [downward and outward] to the side of the *dens sapientiæ*. 4thly. The inferior edge of the middle turbinated bone seems to touch the convexity of the inferior, thus leaving between the two a kind of groove. After this examination of the subject, it is not very easy to admit that the positions spoken of are the only means which nature adopts for the evacuation of this cavity.*

There are cases in which the sinus will empty itself, no matter in what position; when, from any cause, the secretion is thin and watery, as in ordinary coryza; or in case of abundant supuration—here, however, there is an overflow of matter. We should remark that it is necessary to this overflowal, in the first case, that the natural opening be free; for if it be to a certain degree obstructed, there will occur, instead of an efficient discharge, only a slow dropping. The same will happen, in the second case, if the pus is thin; but if thick, it can be evacuated only at the expense of the parts, as when caries occurs, and wholly or in part destroys the nasal opening.

* The very positions suggested by Palfin would seem, by the horizontal direction given to the nasal wall of the antrum, to obviate some of these objections of Jourdain.—*Tr.*

It would appear from what has been said, that the acts of sneezing and of blowing the nose are, from the sudden jar which they communicate, the true means by which the antra are at all times of the day emptied—this explanation is simple, natural, and not unreasonable.

[The secretion upon the entire Schneiderian membrane, in the frontal, ethmoidal, nasal and maxillary sinuses is, under the natural and healthy action of these parts, scant in quantity, sufficient to preserve the softness and pliancy of the membrane, and protect its delicate structure. It is removed, in the same ratio that it is secreted, partly by the evaporating action of the air passing through the nostrils, and partly by reabsorption. It is only when, by increased or diseased action in the membrane, this ratio is disturbed, that the parts become, in some cases dry, hot and parched, or in others, too abundantly supplied with a morbid secretion, which must then find vent in one or the other of the ways above mentioned.]

Special Remarks.

I have found, in some subjects, who have died from putrid and malignant fevers, the pituitary secretion of the sinuses thickened, fetid, yellowish, and occasionally streaked and greenish. In others it would be very viscid, but inodorous; the membrane spongy and swollen. I have also found it in the form of hydatids, of varying consistence, either transparent or clouded.

In others these cavities are filled with an ichorous fluid, resembling weak soup, and sometimes fetid. It is this fluid which is emitted from the nostrils of some persons *in articulo mortis*. Those who die of serous apoplexy, are apt to have the frontal, ethmoidal and maxillary cavities filled with it; but it is most abundant in the chest, in consequence of its larger size. It is found also between the dura mater and pia mater, and between the lobes of the brain.

In cases of death from sanguineous apoplexy, (vulgò, *coup de sang*,) the antra are injected, the membrane swollen, and the vessels varicose. Persons dying of this disease, discharge much blood from the nose after death.

Scurvy and small pox do not spare these cavities. I have seen, in fatal cases of this kind, the lining membrane swollen, spongy, spotted with eruptions, and sometimes with ulcers, when there were none of these symptoms externally.

Cancer of the nose, lips, cheek, eyelids, &c., may be for a time subdued, by internal remedies, by local applications, or by surgical operation. In this case the disease may be by simple metastasis transferred to the maxillary sinus. I laid open the sinus of a female who had lost the entire cartilage of the nose by cancer. The cicatrix had, for some years before her death, (occasioned by malignant spotted fever,) presented a healthy appearance. The pituitary membrane in this case was livid, spongy, and saturated with a tenacious and extremely offensive fluid; covered also with a number of irregular prominences about the size, on an average, of a pea. These I regarded as cancerous germs.

In two subjects, aged fifty and sixty, respectively, I saw the antra, in the one the right, in the other the left, divided into two nearly equal parts by a septum of bone, perpendicular in the first case, and in the other horizontal. In the subject of fifty, this septum was adherent above to the orbital plate, and below to the alveolar border. Anteriorly, by the side of the nasal canal, there was a groove hollowed out for communication with the cavity thus divided off. In the second subject, the partition was adherent to the anterior and posterior walls, and running transversely, formed between the orbit and alveoli a sort of bridge. Spite of these singular anomalies, the antra were in the healthiest possible condition. The corresponding antrum in either case had the natural conformation. Nature, while indulging her singular freaks, has, it would seem, suitable resources. These cavities doubtless performed their proper functions through their natural orifices, which had nothing about them in any way remarkable.

I once, while practicing, in the dead-room of the Hotel-Dieu, the operation of sounding the antrum through its opening into the nose, found it impossible to introduce my sound into the right antrum of a female of over sixty, who had died simply

of old age. This resistance piqued my curiosity, particularly as I had repeatedly sounded the left cavity, and with perfect ease. My sound was so shaped as to assure me that I could not force a false opening, and I with security made fresh attempts, but was equally unsuccessful. I then determined to expose the sinus, and for this purpose removed the nasal and turbinated bones. The natural opening was well shaped, but still my instrument would pass only about two lines into the cavity, when it met with a firm resistance. On removing the nasal septum, I discovered that the cavity was almost entirely ossified. In such cases as these three last mentioned, it is plain that the sound cannot be introduced.

Sometimes the middle turbinated bone is folded down so as to close up the entrance to the antrum; at others it is pressed upon by the spongy tissue of the ethmoid bone. The vomer is occasionally so curved as to lie against the side of the nasal cavity. Under these circumstances, which should be known, that the resources of the art may not be undervalued, it will be very difficult and perhaps impossible to introduce the sound. But those who bring forward these rare cases in excuse for their want of success in this operation, though they may possibly deceive some, will never mislead a well informed man. The art of sounding the maxillary sinus is not to be acquired in a moment; it demands knowledge and experience. The man who bases his surgical operations upon the simple say-so of authors, without having himself performed or even witnessed them, is liable to commit many errors, which he perversely lays to the nature of the operation rather than to the fault of the operator. Such influence does self-love hold over men, that they will often maintain falsehood, rather than confess a want of success. How much do such men impede the progress of useful discovery!

CHAPTER SECOND.

TREATISES ON THE SURGICAL DISEASES OF THE MAXILLARY SINUS.

THERE is not, in the whole literature of surgery, a better sustained treatise on the diseases of the antrum, than the Dissertation* of M. RUNGE.† The author briefly details the practice of those before him, and the comments and operations of his father. The Dissertation is unsurpassed for its time; but this branch of surgery was as yet incomplete; more recent experience and research have shown much uncertainty and contradiction among writers, in cases precisely similar.

In 1760, I published a work entitled *Treatise on the Depositions of the Maxillary Sinuses*. The uncertainty existing in the works consulted, forbid me from taking them as guides; and I had to content myself with giving the results of the experience of a man of twenty-five. Feeble as the attempt was, the journals gave a very favorable notice of it, doubtless in consideration of my zeal, and suggested some excellent advice. Such forbearance is characteristic of noble and well informed minds, while harsh criticism is often the offspring of passion and envy, and tends only to discourage those who seek to cultivate science and art.

In 1764, a celebrated practitioner announced, in the Journal of Medicine, vol. xx, a *Dissertation on the Diseases of the Maxillary Sinus*. In this original essay, the author classes almost all these diseases under one head, and to all applies one nearly uniform mode of treatment. He has, in common with

* Found in vol. i, of HALLER's *Select Disputations*.—Tr.

† Defended at Rintten, [Rintel,] in 1750, under the presidency of M. Zeigler.

others, fallen into errors in operating, from want of closely observing the varying nature of the fluids secreted in this cavity; but he gives here and there some useful suggestions.

From 1750 to 1764, I may say that there appeared no work on these diseases: for though, in this interval, there might have been several memoirs and monographs presented to the "Society for the Progress of Medical Science," they were not given to the public till the latter date.

HEISTER* observes that one great impediment to the successful management of these diseases is the difficulty of access to the cavity by means of the natural opening; its elevated position hindering the free escape of matter, as well as the ready introduction of injections. This, with him, serious obstacle once surmounted, he would seem to argue success and improvement. Up to 1764, no scientific person had responded, directly or otherwise, to this invitation.

In 1760, I seized the idea of Heister; but the difficulty of gaining access to any proper place for the prosecution of the numerous observations required in such a work, forced me to abandon my project. It was not till 1761, that some zealous friends of humanity procured for me these necessary means. I spent the years '61, '62 and '63, in making researches and experiments upon the dead, from all diseases, of all ages, and at all seasons. The evidence of these efforts stands unquestionable; nor could they be without their result. I had acquired such dexterity in the introduction of the sound into the antrum through the nasal opening, that it was almost as easily done as proposed. It remained to make the application to the living subject. Opportunities offered; and, in the conviction that in the useful arts there should be no secrets, I admitted all who were desirous to see me operate. Many men of science have I had as witnesses, and especially on one occasion, calculated to convert to my method the most determined opponent. My success met my expectation; the patient recovered in a very short time from a putrid, mucous congestion of the right sinus, of more

* Institutes of Surgery, vol. ii, p. 622, art. *Ozena*.

than six months' standing, without any other remedial measure than injections through the nasal opening. This case, with others found detailed in volume thirty-eight of the *Journal of Medicine*, established the possibility, as reasonable as it was demonstrable, of sounding the maxillary sinus through the nose, and the advantages resulting therefrom in many cases. I was urged to submit my discovery to a Society whose efforts were no less praiseworthy than celebrated. The sacrifice cost me little ; the advantage resulting from such a course was a motive sufficient to determine me. I hoped also that this first step might lead others to investigate the subject, who should have respect for truth, and also for the man, who, with deference to the opinions of his fellow laborers, had so cheerfully pointed out the way.

In 1765, I offered the result of my researches and toil. I adduced most convincing statements, addressing myself to such as I knew would demand most ample proof. A man fears not the day of trial, when he has truth for his object ; and this I shall ever present when I discover it ; I shall pursue it unremittingly. Some have presumed to assert that they had made this same discovery in 1737 ; but their pretension could not be sustained, for they themselves admitted that no record had been made previous to my publication in 1765. I presented, in this treatise, some cases which seemed to demand more thought than had been given by those who had reported them. The means suggested were not, it is true, to be rejected, but their inconsiderate use, was sometimes, as I showed, pernicious. Had what I published in 1765 served only to arouse men from the indifference with which they had heretofore looked upon the diseases of the maxillary sinus, my labor would have been fully rewarded.

We notice with regret in 1769, volume thirty-one of the *Journal of Medicine*, two writers disputing about the accuracy of certain observations, indulging in criticisms as unsound as they are useless, displaying that perverse attachment to systems which reason and experience daily condemn.

In 1774, M. PORTAL, author of a manual of practical surgery,

published in 1768, continued his record of observations on diseases of the antrum, and added many new and interesting cases. It were desirable that his deductions had been more exact.—The same marks of haste are observable here as in the work of 1768. Still these works tend to the progress of art, and we may yet hope that a solid foundation will one day be formed, on which to rear the edifice of knowledge—knowledge necessary to the cure of the diseases of the mouth, and more particularly of the maxillary sinus.

[We notice briefly the following monographs: Summary of Observations on the Maxillary Sinus, by BORDENHAVE. *Memoirs of the Academy of Surgery of France*, volume four.

A Dissertation by BECKER, (C. Siebold, presid.) on a rare tumor and other diseases of the Superior Maxillary. *Wirceb*, 1776.

A Treatise by DESCHAMPS, on Diseases of the Nasal Fossæ and their Sinuses. Paris, 1804.

A Dissertation by EICHORN, on Polypi; especially those of the Antrum of Highmore. *Gottengen*, 1804. Sir Benjamin Brodie and others doubt the occurrence of true polypus in the antrum; but that it may occur, though very rare, would seem possible, on the authority of such names as WEINHOLD and CHELIUS.

A Dissertation by LEINICKER, on the Maxillary Sinus, its diseases and their cure. *Wirceb*, 1809.

Also, several Treatises in the German language, by C. A. WEINHOLD, not as yet made accessible by translation, to the English student.

A very valuable paper by Mr. LISTON, on the Tumors of the Mouth and Jaws, in the *Medico-Chirurgical Transactions*, 1836.

The Jacksonian Prize Essay of Mr. COMPTON, on injuries and diseases of the maxillary bones. 1842. This work contains a complete compilation of all that had been written by surgical writers on this subject, up to that date, and is in this respect a valuable book of reference.

Essay on Diseases of the Jaws, and their treatment, by LEONARD KOECKER, M. D., edited by J. B. Mitchell, M. D. *Lon-*

don, 1847. At the close of this edition will be found an exceedingly useful table of more than 300 cases of tumors of the jaws, compiled by Dr. Mitchell, from all the journals and special treatises of the past and present. We call the attention of the dental surgeon to this compilation, as presenting much information, and serving as an excellent index of reference to the complete detail of these cases as found in the several journals and treatises cited.

A Dissertation by C. A. HARRIS, M. D., on the Diseases of the Maxillary Sinus, 8vo, Philadelphia, 1843. The only special American treatise on this subject, and embodying much instructive matter.

An admirable work by J. C. WARREN, M. D., on Tumors, Boston, 1837, though not confined by any means to tumors of the jaws, should be in the possession of every enlightened dentist.

In BICHAT's edition of the surgical works of DESAULT, 2d vol.; in Fox on Human Teeth, edited by C. A. HARRIS, M. D., Philadelphia, 1846; and in the Principles and Practice of Dental Surgery, by C. A. Harris, M. D., 3d edition, Philadelphia, 1847, will be found of much practical interest on these diseases.

The attention of surgeons has been more particularly called to the maxillary sinus, in consequence of the difficult and dangerous operations frequently demanded for the removal of tumors originating there, and involving, more or less, the neighboring structures. The reader will find here and there, among the various English Medical and Surgical Journals, many of these operations detailed, as performed by ABERNETHY, BELL, LISTON, BRODIE and others; and in the journals of our own country, many cases of great interest; some requiring surgical operation, as performed by STEPHENS, ROGERS, MOTT, WARREN, &c.; others, yielding to less severe remedial measures, yet equally if not more instructive, because more frequent. A compilation of nearly all these cases, and of many others from various works, who have not dwelt sufficiently at length upon these diseases, to warrant an enumeration here, will be found in Dr. Mitchell's edition of KOECKER.

Although within the seventy years since M. Jourdain wrote the present treatise, much new light has been thrown upon the subject of disease of the antrum, there is much yet to be learned. In fact, of what branch of medical science can we dare say, it is complete? From the intimate relation which this cavity holds to the teeth, we are led to look to the dental profession in full conviction that as its members shall advance in scientific education, they will throw upon these diseases, coming so directly under their cognizance, a constantly increasing light. To them the subject especially belongs; and if they will only feel their responsibility, we may hope one day to see in this department of surgery, that "bright day" of which our author speaks, and in reference to which he calls his own efforts, "the feeble twilight."

We would refer to the American Journal of Dental Science, for constantly occurring and very important cases of these diseases, at the same time commending it to the members of the profession, as an excellent medium through which to make known the cases coming under their observation.]

CHAPTER THIRD.

AMBIGUITY OF VARIOUS TERMS APPLIED TO DISEASES OF THE MAXILLARY SINUS.

NEARLY all writers have classed ozena among the diseases of the maxillary sinus, adding, when speaking of the diseases, the term maxillary. This adjective does not make this application of the word any more correct: in fact, from the great share which the maxillary bone has in the formation of the nasal fossæ, this specific ulceration of the nostrils may itself be not inaptly termed maxillary ozena. I discuss this point because, as I shall presently show, ozena is properly confined to the nostrils, and is quite different from the diseases of the antrum, the treatment in the one case not applying to the other; and because in some diseases of the antrum, purulent matter, escaping thence into the nostril, has deceived practitioners, otherwise of excellent judgment, and led them to direct their remedies to the nasal fossæ, which, in fact, were not at all affected. Vague definitions are unsafe in so important an art as this, which concerns the life of man.

It is idle to object that these terms are established by usage, for diseases of the antrum have been very obscurely known. But let us refer to our first teachers, and see what they understand by ozena.

CELSUS, b. vi, ch. 8, says: "Every ulcer attacking the nose is not called ozena. Ozena, properly so called, is an ulceration of the nostrils, with incrustation "of an offensive odor." He gives the characteristic symptoms whereby to distinguish it. PAUL, b. v, ch. 34, says: "Ozena is a fetid ulceration of the nostrils, attended with an acrid discharge." MANGET,

Surg. Dict., v. iii, bk. 13, gives the following satisfactory detail: "Ozena is a protracted, putrid and offensive ulceration of the nostrils, discharging an infectious, fetid sanies, and attacks the bones and cartilages of the nose. It is caused by an acrid and sometimes malignant humor, as in syphilis. It may be recognized by the sanious discharge, and the scabs which fall from the nose. The offensive odor annoys the patient, disgusts those about him, and spreads contagion around. [It is not contagious except when a sequel of syphilis.]

The offensive odor [the word *ozena* is formed from the Greek root $\sigma\zeta\eta$, *a stench*,] is the only symptom, in common, of *ozena* and of diseases of the antrum, and in these latter is not invariable; as when the nasal opening is closed, or the deposition in the cavity is purely lymphatic.

[We find the terms *lymph* and *lymphatic* very vaguely used among the older writers. Frequently they are applied to altered mucous secretion, and in fact to all puriform and ulcerous discharges, the nature of which has not been exactly understood. In this vague sense must the word be taken throughout this translation, though we shall avoid its use as far as practicable.

Lymph, in its proper acceptation, is the fluid which circulates in the absorbent vessels. It is usually colorless, sometimes of a reddish opaline hue, slightly saline to the taste, and closely allied in composition to the *liquor sanguinis* of the blood. Over 900 parts in the 1000 are pure water, the balance consisting chiefly of albumen, a small proportion of fibrin and muriate of soda, with a slight trace of some of the salts of soda, lime and magnesia. The office of the absorbents is to take up the fluid portion of the blood which has permeated the walls of the capillaries, and been imbibed by the intercapillary parenchyma for the purposes of nutrition and secretion, and return through the veins of the neck, to the venous system, modifying in their course, most probably, its composition, so as the better to fit it to enter again into the general circulation. They prevent the accumulation of the healthy secretion of serum in the closed cavities of the body, and also assist in maintaining the proper balance of the mucous and cutaneous secretions.]

Again, when this opening is free, giving passage to putrid exhalations, we do not find either the emission of the crusts, or the continued purulent discharge peculiar to ozena. Undoubtedly these symptoms may attend, in some cases, disease of the antrum; but this is only in case of an extension of ozena to this cavity, just as antral affections may extend to the nasal fossæ, or in cases of scurvy or small-pox. But since diseases of the sinus are not confined to scorbutic or variolous patients, the existence of the one common symptom of fetor does not warrant the extension of the term ozena to them. The symptom in these diseases arises from the fact that, in inspiration, the air, in passing through the nasal canals, is forced into the maxillary cavity, and there, becoming tainted with the foul exhalations arising from certain secretions, it is in part forced out during expiration, and so affects the breath.

The inappropriateness of the term ozena probably occurred to the learned and distinguished author, who, to avoid the confusion thence arising, has described most of the diseases of the antrum under the name *retention of mucus*. The idea is to a certain extent well conceived; but to decide how far it is admissible, we must examine the import of the word retention, and its applicability.

Retention and suppression are nearly synonymous. [*Retention* of mucus, urine or the menstrual discharge, implies that though secreted in their respective cavities, these fluids are prevented from escaping; while by *suppression* is understood a cessation of this secretive process. While the former gives rise, oft times, to no less grave results than the latter, this latter usually indicates a more general and serious constitutional disturbance.] They imply cessation of some natural discharge. This cessation may arise from the nature of the fluid, which may become too thick; or from defect of the outlet, which may become closed, either by swelling or thickening of its walls, [or by some tumor or foreign substance pressing upon or applied against it,] or from spasm or rigidity of the fibres of the sphincter muscles, where such exist. Or it may arise from altered action of the secreting membranes or glands, as seen in

the lachrymal glands, uterus and kidneys, in suppression of the tears, menses and urine.

But if the patient shall, in blowing the nose, discover blood, pus, or any fluid whatever, [other than the natural secretion from the Schneiderian membrane ;] and farther, if, after the extraction of the tooth supposed to be the cause of the disease in the sinus, there be an opening into this cavity, natural or artificial, and if fluids injected through this shall escape into the nostrils, it is plainly proved that there exists no retention, and that the natural opening is free. Still I would not be understood to say that retention never occurs. On the contrary, when the antrum is painful and distended; when the patient discharges only natural mucus from the corresponding nasal canal; and especially when the injections just mentioned find no vent into the nostrils, there is undoubtedly retention. It is in this last named case that fistula so often follows the treatment of these diseases. It is surprising that this subject has received so little attention, and that patients have been suffered to endure, for the remainder of life, so disagreeable an annoyance, the remedy for which is, as I shall prove, so simple.

In the majority of the diseases of the antrum, writers have very justly termed the fluid secreted a *deposition* ; but they have strangely confounded purulent deposits with lymphatic, and imagined that the same treatment will answer for either. From want of this distinction, though they have written much that is useful concerning the former, they have fallen into many palpable errors with respect to the latter. It is a distinction of the last importance, if we would avoid doing mischief to our patients; and this I shall prove in the sequel.

Again, some have given to certain tumors in which there is distention and softening, without disorganization, of the external wall of the antrum, the name (*ecartement*) separation. Where the osseous organization is still preserved, if the finger be pressed upon the tumor and then removed, crepitation will be heard as it returns to its position: this will not occur where, as in fungous disease, the bone is disorganized, and, as it were, carnified. From inattention to this distinction, an operation

might be attempted in the first case, as though the bone had been reduced to the fleshy consistence of the last: such practice would be most injudicious. But, to return, the term, *ecartement*, is admissible only in cases where there is solution of continuity. We use the word in speaking of want of union between the bones of the cranium, of luxations, of fractures, of all cases where there is a separation of parts. But in speaking of abscess, where the skin is, however, much swollen, we say there is distention: in exostosis, the bone is distended to a greater or less degree, &c. Therefore, in tumors, where there is no solution of continuity, the bone remaining attached throughout its entire circumference, the term distention is alone applicable, and will prevent confusion.

CHAPTER FOURTH.

§1.—SYMPTOMS OF DISEASES OF THE MAXILLARY SINUS.

THE first stage of disease of the maxillary sinus is generally either (*engorgement*) congestion or the retention, or an effusion of some fluid ; forming three classes of disease, whether arising from causes external or internal. Congestion is either serous or sanguineous, and may arise from a bad state of the teeth or gums, or from such fractures, wounds and injuries as the antrum is liable to. It may be occasioned also by checked perspiration, especially of the head, by a current of cold or humid air, by pituitous catarrh, by a tendency to thicken, found sometimes in the secretions of the membrane of the sinus, by a rigidity of the fibres of its small vessels, and by a variety of other causes.

The symptoms of sanguineous congestion are a feeling of oppression and pain in the region of the sinus; difficulty in blowing the nose; a sensation of numbness and pain, when touched, in the teeth corresponding to the affected cavity. There is much irritation of the gums and of the vault and veil of the palate, and the patient sometimes expels from the nose pure blood, or blood mixed with mucus. The pain extends to the cheek, which becomes hot, and especially to the corresponding nostril; and should the patient, by any accident, fall on the side affected, the shock occasions severe pain in the sinus. This congestion may be occasioned sometimes by caries of the teeth, or inflammation and suppuration of the pulp; by periosteo-dental ulceration, or by incomplete luxation of some contiguous tooth.

Serous congestion is marked by a sense of uneasiness and

weight in the antrum ; absence of mind and sleepiness ; a dull heaviness of the head, with ringing in the ears ; paleness of the palate, and sometimes a relaxation of the uvula, and a thin and scant secretion of mucus. The teeth on the affected side seem often as if elongated, and yield to the touch.

Sanguineous or inflammatory congestion, if neglected, passes into suppuration. The cheek then becomes irritated, swollen, and inflamed, and the patient experiences keen throbbing pains, especially when sneezing or lying on the affected side. The mucus secretion becomes purulent, and escapes above one of the molares, on the outside of the alveoli, or within, on one side of the roof of the mouth, either by the formation of a phlegmon or a fistula, communicating with the antrum. If serous congestion be neglected, as, in consequence of the absence of pain, too often happens, an effusion of fluid takes place into the sinus, which, however, is less liable to pass into fermentation and become putrid than a sanguineous effusion ; hence, in such cases, an offensive odor from the nostrils is comparatively rare.

The nature of lymph prevents its conversion into pus, causing it to retain its serous character, sometimes watery, at other times mucous and mucilaginous. [The various secretions of the body, healthy and morbid, are not, as this sentence would imply, convertible. A mucous membrane may, in certain abnormal states, secrete, instead of its natural fluid, a serous, purulent or hemorrhagic discharge. So the arachnoid tissues may secrete pus and coagulable lymph, and the skin, as when under the excitement of a blister, may pour forth serum. But all of these secretions have their separate fixed composition, and cannot, when once secreted in any of the cavities of the body, be converted the one into the other. Change of secretion always implies alteration in the function of the secreting surface, and is a very important diagnostic symptom of disease.] Possessing none of the acrid properties of pus, it simply softens the adjacent bone, without destroying its organization, as is evident from the crepitation upon the application and sudden removal of compression, and also from the fact that, upon the

discussion of these tumors by proper treatment, the bone returns to its original condition.

In serous congestion, the color of the skin is unchanged, and the swelling is confined to the bone beneath. It is most common in persons of a phlegmatic temperament, and in the aged, and rare among the young and those of sanguine temperament. In children, it is an unfavorable indication, showing often a scrofulous diathesis. I have, in many of these cases, found the parotid and axillary glands hard and swollen.

Congestion often gives rise to retention, which in its causes and symptoms, is somewhat analogous, with this difference; in the one, the patient always passes some fluid through the nose, while in the other, the nostril of the affected side is dry, and often without the sense of smell. It is chiefly in these cases where the resulting retention is neglected, that inflammation ensues; for I would have it distinctly understood that simple serous engorgement is very rarely followed by inflammation.*

§ 2.—INFLAMMATION.

Increased oscillation of the arteries has ever been regarded as the proximate cause of inflammation, arising from an abnormal state of the circulating fluid; or from some obstruction in the vessels; or from too great rigidity of their fibres, preventing their natural dilatation and contraction, and reducing their calibre so as to impede free circulation.

[The elastic fibrous coat of the arteries tends to equalize the peristaltic movement of the blood, caused by the heart's action, and thus gives the uniformity of circulation observed in the capillaries, but has no muscular power to give to their circulating fluid any force additional to that received from the heart. Any fancied oscillatory power of the arterial tunics cannot, therefore, be the proximate cause of inflammation.

* Some points of interest in this chapter will be more particularly noticed by the translator in another part of the work, where these subjects are treated more fully by the author.

Upon this perplexing and still undecided question, we can expect little information prior to HARVEY's discovery of the circulation of the blood ; and for a long time after, we can glean from the midst of theories and fanciful speculations, little that can satisfy. Neither the mechanico-chemical theory of the illustrious BOERHAVE, nor the agency of an abstract metaphysical *anima*, as imagined by STAHT, however well directed by the *archeus* of VAN HELMOT ; no explanations of spasm and atony, as advanced by HOFFMAN, or doctrine of excitability, carried to so absurd and injurious an extent by BROWN, can satisfy a mind that has felt the necessity, first urged by the great SYDENHAM, of careful attention to the phenomena of nature.

These phenomena have been studied with a diligence and minuteness that seem to have left little undiscovered ; and still with all the light now thrown upon the subject, we are told by Dr. HASTINGS "that inflammation consists in a weakened action of the capillaries, by which the equilibrium between the larger and smaller vessels is destroyed, and the latter become distended" while others assert, prominent among whom is M. GENDRIN, that this inflammation has, for its primary cause, increased action of the capillary vessels. In the midst of such discrepancies of theory, it is safe to confine ourselves to a careful observance of the phenomena of nature.

In investigating the phenomena of inflammation, a skilful use of the microscope is indispensable ; a skill which constant practice alone can give, and which very few attain. The most accurate and conclusive, as well as practical and philosophical researches, on the phenomena of the inflammatory process, are those of KALTENBRUNNER. For a detail of these highly interesting experiments, we must refer to the author, and confine ourselves here to a brief statement of the most important observations and conclusions.

Between the smallest branches of the arteries and the commencement of the veins, there are, in every part of the system, an immense number of still smaller vessels, uniform in calibre, everywhere anastomosing, and continuous at each extremity with the arteries and veins, forming the capillary system. Some

of these vessels are sufficiently large to admit the red globules of the blood ; others so small as to circulate only the serous portion. If now to these vessels any irritating agent be applied, there will be, after an interval, which Kaltenbrunner terms the "period of incubation," an increased and accelerated flow of blood through the capillaries, their walls appearing to contract upon the contained fluid. The venous extremities of the capillaries now circulate arterial blood, the secretions of the part are momentarily suspended, and the parenchyma begins to swell and assume a bright arterial hue. These phenomena constitute the first or preparatory stage of inflammation, and is termed "active congestion." If now the irritating cause be removed, these symptoms may subside, and the circulation be restored to its natural equilibrium. But otherwise, new symptoms will appear: the distended capillaries no longer contract on their contents but lose their tone and dilate, the circulation becomes retarded and uncertain, and finally ceases in places altogether, the red globules cohering in irregular masses, forming points of stagnation, around which the symptoms of active congestion still continue, to yield in turn to those just presented. The stagnated blood becomes changed, the coats of the vessels in many places weakened, and partly by their rupture, partly by endosmosis, there is an extravasation and effusion into the surrounding tissue of blood, or coagulable lymph or serous fluid; the structure of the part is changed, and inflammation is now established.]

Under this inflammatory action, the arterial tunics are drawn and distended, giving rise to pain, heat and swelling. The redness is due to the interception and infiltration of the circulating fluid among the capillaries, and is visible only in inflammation of external parts. Internal inflammation may be detected by interruption or alteration of function, by the heat and pain experienced by the patient, and by the constitutional fever almost invariably accompanying.

[*"Nota vero inflammationis sunt quatuor, rubor et tumor cum calore et dolore,"* says CÆLUS, and this enumeration of the local symptoms of inflammation has been uniformly adopted up

to the present time—redness, swelling, heat and pain. A fifth symptom, alteration of function, is equally important, and is frequently our only means of determining the existence of inflammation. Redness is a symptom to be seen during life only in external inflammation, but analogy and microscopic investigation prove its existence in many, if not all, internal inflammations. It is occasioned by the increased afflux of blood, whereby the smaller capillaries, which before circulated only the liquor sanguinis, are so much enlarged as to convey the red globules, and in the larger capillaries, the number of these globules are much increased. Redness varies in hue from the bright scarlet of arterial blood, to the dark purplish hue of sluggish inflammations, often the precursor of gangrene; and must, in all cases, be preternatural, before it can be considered a symptom of inflammation.

The swelling, which is not a constant symptom, arises in the first instance from the increased afflux of blood, subsequently from the effusion of coagulable lymph, blood, serum or pus. It may subside with the inflammation; if caused by effused blood, serum or lymph, these will be reabsorbed, or if, on the free surface of a membrane, exhaled; if by pus, it must escape by an outlet, natural or artificial. Or it may be permanent, in consequence of the organization of the plastic lymph poured out, and thus give rise to hypertrophy.

The heat is occasioned by the increased afflux of blood, and appears more intense to the patient than it actually is, in consequence of the heightened sensibility of the part. Whatever theory we may choose to adopt, respecting the source of animal heat, it is an undoubted fact that the heat of the various parts of the body is proportioned to the supply of blood; and it is well worthy of notice that this heat of inflamed parts never rises above the temperature of the central parts of the body.

The pain of inflammation is in part occasioned by the action of the distended parts on the nervous filaments, but seems by no means proportioned to the number of these filaments. The bones, fibrous tissues and arachnoid membranes, for instance, in which few nerves can be traced, may become, under inflamma-

tory action, exquisitely painful. It will generally be found that those tissues least capable of yielding, become most painful; that pain is usually greatest in external inflammations, and greater in investing membranes as the serous, than in lining, more yielding membranes such as the mucous, these latter being more soft and yielding in their texture. In duration, severity and character, it is subject to every variety. It is as yet undetermined by physiologists, whether, in inflammation, the nerves determine the action of the vessels, or whether their condition is a result of this action. Independently of all theory, we know this, that the application of any sufficient stimulus excites, through the medium of the nerves of organic life, an increased action of the vascular system, which in turn greatly exalts the nervous susceptibility. Inflammatory action is almost invariably accompanied by pain, and violent neuralgic paroxysms are not unfrequently attended or followed by the other inflammatory symptoms, swelling, heat and redness.

These four symptoms, from time immemorial regarded as the attendants of inflammation, are not invariably present. Inflammation may occur without pain, and in consequence of its absence, prove very insidious, because unsuspected; or without any appreciable increase of temperature; it may be unattended by any discernible swelling, or perceptible redness, but never takes place without some alteration in the vital action of the part, and a consequent change or suspension of function and secretion.

Upon the effect of inflammation in altering the secretions of mucous membranes, we select a few remarks from the pen of Dr. A. CRAWFORD.

“The fluid secreted by mucous membranes consists, in health, of animal mucus, held in solution by an aqueous fluid, and containing a small quantity of saline matter: the proportion of these ingredients varies in the different mucous membranes, and in some other elements are added to them; as muriatic acid in that of the stomach, a sebaceous matter in that of the ear, &c. In active congestion, or commencing inflammation, there is generally more or less increase of the natural secretion: it has,

in ophthalmia, the appearance of thin, viscid, yellow mucus ; in coryza, it is more fluid, and of a yellow white ; in bronchitis, it is transparent and viscid, like the white of an egg mixed with water ; in diarrhœa, it is very watery and copious, with white flakes floating in it, and more or less tinged with bile. In inflammations of the vagina and urethra, it is thin, white and transparent ; in those of the urinary bladder, it floats in the ovum, in the form of thin, viscid flakes. In all these cases, excepting the digestive tube, it is slightly alkaline, owing to the presence of a little soda. These copious secretions of thin mucus often prove critical, in relieving congestion or slight inflammation."

According to this writer, in more acute inflammations there is a thin sero-mucous fluid, excoriating by virtue of the alkali contained, sometimes streaked with blood, and differing from the secretions of the milder form by containing albumen, often in large proportion, and also occasionally fibrin, leading to the formation of false membranes. As the inflammation advances, the secretion lessens, becomes scant and viscid, or ceases altogether ; and again, as it abates, the secretion returns, copious in quantity, and changed in quality, a change which gave origin among the ancients to the term "well concocted." In violent inflammations, this secretion may become entirely purulent. Pus and mucus may be secreted together in all proportions, from the free surface of mucous membranes, nor is it as important to be able to distinguish between the two, as was supposed by older writers, since now it is proved that pus may thus be secreted without implying any solution of continuity. The surest means of distinguishing between them is the microscope, which will discover the pus globules, none of which are found in pure mucus.]

Inflammation, though an abnormal condition, is not so much a disease as a symptom, developing the character of the accompanying disease in proportion as it assumes its peculiar features and force. It may be divided, in view of its causes and effects, external or internal, into accidental or transient, permanent, periodical, symptomatic and critical : to all of these the maxillary sinus is liable.

[Whether, with our author, we regard inflammation as a symptom of disease, or with BRONSSAIS, as the cause of all diseases, it is essentially the same in its essence, however modified in development by attendant circumstances. Any classification therefore of inflammation, based upon its causes, its degrees, its seat or its terminations, is necessarily arbitrary, often unphilosophical, and seldom of any practical utility. The division adopted by our author, is not free from these objections. His own exposition of it shows its undefined character, and leads us to doubt whether among the many bases of classification, he has adopted the best.

By HUNTER and others, inflammation is divided into healthy and unhealthy; again into general and specific; into acute, sub-acute and chronic; into adhesive, suppurative, ulcerative and gangrenous; again into five classes, accordingly as it is seated in either of the five elementary tissues of BICHAT, the cellular, serous, mucous, dermoid or fibrous. But any classification we may choose to adopt will be found to involve inconsistencies, and we therefore prefer to use the word in its essential signification, without any adjective qualification, reserving the consideration of all modifications till we come to the specific diseases under which they are developed.]

Accidental inflammations of the sinus are those which arise from some disease of the teeth, as caries, uncomplicated with any morbid constitutional tendency; also those occasioned by blows, falls, bruises, and solutions of continuity. In this class may be placed the inflammation which supervenes upon the use of mercury, in the treatment of syphilis; that arising from the use of violent sternitatories, from certain fumigations, and from the insufflation of very pungent odors. This kind of inflammation terminates usually in resolution, the result either of judicious treatment or of nature's unaided curative efforts. It may also end in suppuration.

Continued inflammation of the sinus may occur when to the external causes above named, there is added some internal cause, giving permanency and increase to the inflammation, which may lead it to terminate in suppuration, gangrene or caries, etc.

[Of what are usually called the *terminations* of inflammation, namely: resolution, metastasis, effusion of serum, effusion of lymph, ulceration and mortification, only the first and last can with propriety be so called; the others are more correctly accompaniments, or, to use a happy expression of Dr. Watson, “events” of inflammation.]

The suppression of some customary flux, as hemorrhoids, epistaxis, &c., may, we think, excite inflammation of the maxillary sinus, as also may the suppression of a copious salivary secretion arising from a vitiated state of the teeth. It is well known that such suppressions occasion pains in the throat and head, stiffness of the jaws and swelling of the gums. Inflammation arising from these causes will ordinarily, under correct treatment, terminate in resolution.

Critical inflammation of the sinus may occur from absorption or metastasis of various cutaneous affections; at the close of malignant and putrid fevers; in measles and varioloid; from the hasty closure of issues, ulcers, and other discharges of long standing; lastly, from the imperfect eradication of the venereal or scorbutic taint. In such cases the teeth and gums may have no primary agency in exciting disease; therefore, though their disordered condition may determine the development of the lurking poison in this particular place, we must not regard them as the essential cause of the inflammation.

[Scorbutus or scurvy, so often mentioned by our author in connection with scrofula and syphilis, does not now hold the important place in the list of diseases that it did during the last century. Previously to the year 1796, this disease was the scourge of navies and maritime interests, destroying, it is believed, more lives than all the accidents of war. But a judicious treatment, based upon a better knowledge of the causes of the diseases, has now rendered it of comparatively rare occurrence.

The symptoms of scurvy are, “general debility, fetid breath, sponginess and turgidity of the gums, livid subcutaneous spots, (these spots or extravasations are also met with in purpura hemorrhagica, an analogous but not identical disease,) particu-

larly at the roots of the hair, ecchymoses, spontaneous hemorrhages, and frequent contractions of the limbs." Impure air, insufficient and unwholesome food, long continued use of salt meats, may, each and all, tend to induce this constitutional derangement; but accurate and repeated observation has established conclusively, that by far the most universal and active cause is the deprivation of esculent vegetables, and that this cause is the more active under exposure to continued cold and moisture. To the introduction of vegetable acids such as the citric, and esculent vegetables, especially the potato, as remedial and preventive remedies, physicians are indebted for their control over this once formidable malady. So certain have they been found in their action, that no ship-master would be excusable, who, for the want of such accessible remedies as lemons and potatoes, should allow this disease to invade his vessel.]

Not unfrequently some vitiated humor, constitutional or hereditary, lies dormant in the system, until, from its accumulation, or at some crisis of nature, it reveals itself—often in such a way as to prevent its immediate recognition. Febrile excitement is ordinarily the precursor of its development, and this is the first step in the progress of inflammation. The dormant poison thus roused, falls, it may be, without the existence of any previous disease, upon this or that organ, occasioning various diseases, which are indicated by the presence, and sometimes diagnosed by the peculiarity, of the attendant heat, pain and inflammation. This unforeseen inflammation we call symptomatic, and is the more difficult of management from the fact that we cannot always meet it at the outset, so that when sufficiently developed to be distinguished, it has then progressed almost beyond the control of remedies. Of this nature are cancer and fungus of the sinus. They are indicated by numbness and dull pain in the region of this cavity; head-ache, sleeplessness, suppression of mucus on the diseased side, or else its transformation into a yellowish, fetid, acrid and corrosive fluid; loosening and elongation of the corresponding teeth, with softening and distension of the bone, unaccompanied by any

change in the color of the gums. Previously to the external eruption [ulceration] of the tumor, there is occasionally a pause in the progress of the disease. It is fallacious however, for the disease is not arrested, and will extend itself ere long with only the greater virulence. Could we but detect the malady in the onset, we might possibly, at the cost of a few teeth, for the more ready application of our remedies, arrest its incipient progress; but we must confess that our present knowledge is at best an uncertain guide in the treatment of these diseases.

When there is pain and inflammation of the sinus, with discharge of real pus, followed by caries, fistula, &c., and not occasioned by any disease of the teeth or gums, we have reason to suspect, from the more or less rapid destruction of parts, the presence of some syphilitic or scrofulous humor: a scorbutic habit is usually still farther marked by a foul state of the gums, looseness of the teeth, and the occurrence of purple spots over the skin and mucous membranes. Scorbutic and venereal inflammations tend more commonly to suppuration than do cancerous and scrofulous. A union of the two last will produce carcinoma, characterized by a peculiar induration of the tumor. Lastly, on this subject, we would remark that it is a great error to assign, as the causes of these diseases, any disordered condition of the teeth or gums which may have given rise to vitiated secretions or abscess just previously to their access: they should be ascribed to a deeper seated pervading cause—a depravation of the humors of the body.

[Few terms in surgery have been used more vaguely than scirrhus, cancer and carcinoma. CARSWELL classes under the generic term carcinoma those malignant diseases known as scirrhus, cancer, fungus hematodes, and various forms of sarcoma: he describes the harder forms of disease under the term scirrhoma, the softer under that of cephaloma. Perhaps a better classification of cancer or carcinoma is, by Dr. WALSHE, into: *encephaloid*, including the medullary sarcoma of Abernethy, fungoid disease of Cooper, medullary fungus of Chelius, soft cancer and fungus hematodes of various authors; *scirrhus*, embracing the lardaceous tissue of French writers, carcinomatous

sarcoma of Abernethy, and stone cancer of other writers; and *colloid* or jelly-like cancer, called also by Cruveilhier pultaceous cancer, pearly alveolar cancer, areolar gelatiniform cancer, and by Hodgkin gum cancer.

Suppuration is not always indicative of caries, which must not be confounded with simple denudation. [Denudation, if of any extent, almost invariably occasions necrosis; especially in the shafts of the long bones, less certainly in the more highly organized spongy bones.] If the purulent secretion be fetid, ill-conditioned, dark, greenish or streaked, there is stronger presumption of caries, where its existence cannot be determined by sight or touch. Certain forms of fungus are indicative of the presence of caries.

If, in cases of fistula lachrymalis, the patient feels pain in the sinus of the same side, with tenderness of the teeth, and has a purulent secretion, there is reason to fear that the fistula connects with this cavity; and if fistula lachrymalis be consequent upon disease of the sinus, it may be said to have originated in it.

Cancer of the eye may extend to the sinus, and cancers of the sinus involve the eye. Cases of this kind will be found throughout this work.

[The distinction urged by the author between the local exciting causes of maxillary diseases and their constitutional predisposing and modifying causes, is a just and important one. Pre-eminent among local causes, are the various dental affections, caries, necrosis, exostosis, endo-dental and peri-dental inflammation, alveolar abscess, &c.; but these may all exist, and in an aggravated form, without necessarily inducing other maxillary disease, especially if the system be not under the influence of the venereal poison or of any carcinomatous, scrofulous or scorbutic diathesis. But where these cachectic habits of body prevail, dental irritation may readily become the centre or excitant of local disease; or they may show themselves in the maxillary sinus without any previous appreciable existence of such irritation.]

CHAPTER FIFTH.

TREATMENT OF DISEASES OF THE MAXILLARY SINUS.

THE performance of a hasty operation, in the desire to make a brilliant display, may be as productive of mischief as delay in case of urgent necessity. Before we condemn or applaud an operator, before we adopt him as an example, we should carefully examine his reasons for any given mode of operation; notice if, under the influence of preconceived ideas, he disregards sound principles based upon reflection and experience; and study whether the particular operation practiced be, under the circumstances, the only, or the best one. For satisfaction on these points, we shall inquire into some of the operations performed for diseases of the maxillary sinus.

DRAKE advises the extraction of one or more teeth for the escape of collections within the antrum. MEIBOMIUS, the younger, claims for his father the discovery of this method. COWPER has, in addition to the method of Drake, suggested the necessity of perforating the floor of the socket—a point on which the latter is silent. But this silence of Drake will not, in the opinion of any impartial man, detract from the merit of, or in any way affect, the idea as originally suggested by him. He made no mention of perforation, because, in the cases observed by him, the simple extraction of the tooth gave vent to the confined matter, in consequence either of the destruction of the alveolar wall, or of the penetration of the fang into the cavity, and he had too much wisdom to counsel an unnecessary operation. Cowper, on the other hand, met with cases where there existed no such destruction, and impressed with the necessity of giving vent to the morbid fluids, advised perforation. The design of both was the same, whilst their plans were modified by the circumstances observed by each.

JUNKER adopted the operations of Drake and Cowper; but if we will go back a little, we shall find that these three, and in fact many others of our day, have copied from SCHULTIUS. This will appear from an observation of the latter, found in Baron Haller's "Collection of Anatomical Dissertations," published at Gottingen.

The sinus is subject to purulent collections without any co-existing dental caries. In such cases M. LAMORIER proposes, for the evacuation of the sinus, and at the same time the preservation of the teeth, to trepan the external wall of the cavity above the third molar. VALATERUS regards this operation as a disgrace to surgery; but here this otherwise estimable writer judges too harshly, for repeated experience has shown its necessity. These modes of perforation are applicable only to purulent collections within the sinus, and are insufficient in cases of caries, fungus, polypus, exostosis, &c.

The antrum is liable to serous collections which must not be confounded with the above, inasmuch as they are different in their progress and symptoms. In these cases the fluid, finding no vent through the nasal opening, sometimes distends the external wall of the cavity very greatly, at the same time softening its texture, though not destroying its organization, as is proved by the crepitation upon pressure. M. Runge suggests in such cases the perforation of the distended wall, and employs for this purpose a bistoury [or scalpel] turning it several times on its axis to enlarge the opening sufficiently for the introduction of the finger. [Desault employed for this purpose two perforators, one sharp and triangular, the other blunt for the conclusion of the operation, to avoid wounding the opposite wall of the antrum. He selected for the site of this operation the canine fossa.]

Some modern surgeons have enlarged upon this method, and thought it best to remove the softened bone and the carious teeth or fangs, by a V shaped incision, extending from the second incisor to the third molar. One very respectable writer thinks it would shorten the operation much to perforate and partially destroy the external wall of the antrum, by means of

the actual cautery. But this operation is demanded only in cases of fungus of the sinus, involving the bone, and when employed in any less urgent cases, must be regarded as rash and unnecessary. [The actual cautery has ever been used by the French to an extent which has no parallel among English and American surgeons. Such free and in many cases uncalled for employment of so terrible a remedy, cannot meet the approval of any humane practitioner.]

In cases of fistulous opening at the upper part of the sinus, it frequently becomes necessary, in consequence of matter collecting below this orifice, to establish a counter opening at some more depending part of the cavity. M. M. HEVIN and BERTRANDI have tested the excellence of this plan. [RUFFEL passed a seton from the buccal fistula through an opening above the gum. CALLISEN advised the lower opening to be made in the vault of the palate, if any fluctuation were perceptible there; BUSCH and HENKEL made it through the alveoli.]

In those instances where, from congestion, irritation or inflammation, there is a retention of secretion, consequent upon partial or complete closure of the natural opening, may we not, instead of resorting to the operations above mentioned, restore this opening? The possibility of so doing I shall hereafter prove beyond contradiction. The advantage of this method over the others is, that the injections used do not so immediately escape; their effect therefore is not so transient, and the treatment is less prolonged. But the operation is one demanding much experience. Sometimes the artificial opening, which it has been deemed necessary to make, remains fistulous. This results either from an improper dressing of the wound, or, oftener still, from the obliteration of the natural opening, in consequence of which, the secretions of the cavity, compelled to find some egress, seek this fistulous orifice. Such cases, I have proved by many examples, to be capable of relief; my right of discovery, so long questioned, is indisputable, and suffering humanity as well as the honor of the art, call upon surgeons to give it encouragement.

[Molinetti advised the division of the cheek between the ma-

lar bone and infra-orbital foramen, previously to the perforation at that point, but this complication of an external incision should if possible be avoided, because of its liability to give rise to fistula.

The method of Gooch was to perforate the nasal wall of the antrum, and insert a leaden canula. A canula will also be frequently required in cases where an opening is made through the socket of a tooth. It should be so constructed as not, by any accident, to slip up into the antrum, and be provided with a movable plug, to prevent the entrance of food into this cavity. The best material is of course gold; silver will answer, but lead has none of those advantages which it was supposed by older writers to possess, in consequence of any fancied un-irritating qualities.

Of the various modes of perforation here named, the best under ordinary circumstances, is the removal of a diseased tooth, and penetration through its socket. If the teeth are all sound, or all lost, so that there are no longer any alveolar cavities, the best place of operation is the canine fossa, and an excellent instrument for the purpose is a pair of strong, short bladed, sharp pointed scissors, with the cutting edges looking outward. After raising the lip, and cutting down to the bone, the point of the closed scissors may be forced into it, and then by expanding their blades in different directions, the opening may be enlarged to any required size. Peculiar circumstances may, in individual cases, warrant other modes of procedure, but in the vast majority of cases, the two here named will be found best.]

Cancer, fungus, caries and exostosis may be removed by the knife or cautery, separately or combined. Caustics may also be used, and ligatures; of these I shall speak more fully again.

Rasps, scrapers, perforators, nippers, straight and curved scissors, errhines, &c., are not unfrequently necessary in the treatment of diseases of the maxillary sinus; but their injudicious use often brings harm to the patient, and discredit upon the surgeon. Again, although the operation be decided upon with judgment and performed with skill, much will depend upon the after treatment, or dressing of the wound. Negligence

here may occasion pain, reabsorption of vitiated humors, fungous granulations, fistulas, and other accidents, none of which have any necessary connection with the operation.

The articles used in dressings are simple, as cataplasms, injections, gargles, dossils, pledgets, &c.; or complicated, that is, used in addition to the simple remedies as circumstances may demand. Such are bone rasps, scrapers, caustics and escharotics; the latter, whether applied in solid or liquid form, requiring the greatest caution.

Compression is used only for the arrest of hemorrhages, to keep down swellings and preserve parts in their natural relation, and may be direct or graduated. In some cases it may aid the escape of morbid secretions, but its employment for the excitement of inflammation and suppuration is decidedly pernicious. The very compression impedes the free escape of pus, and may determine its reabsorption; besides, we have for this purpose means much more simple and convenient.

Injections are employed not simply to wash the wound, but, according to their composition, to cleanse, to correct a putrid or acrimonious discharge, to give tone to, or to relax the parts; also to remove foreign substances inaccessible by other means. Sometimes it will be necessary for the injection to remain in the cavity, the better to thin the thickened tenacious secretion, and the more effectually to act on the parts affected.

Dossils and tents are frequently used as vehicles for such topical applications as may be necessary, and prevent the too hasty closure of the wound. They may also act as dilators. They are used moist or dry, and keep up suppuration, absorbing the pus.

Setons are strips of linen or tape, free at each end; they may be medicated and introduced into deep wounds, as of the sinus and mouth, and should present themselves externally by small openings. They are similar in their action to dossils of lint, but are preferable to the latter from their less volume, greater length, ease of introduction, and less liability of falling into the cavity of a deep wound. By this last accident, dossils of lint sometimes become foreign bodies in a wound, occasioning in-

creased and offensive suppuration, and possibly caries. To obviate this danger, it is recommended to tie the dossil and secure it to one of the teeth; the same course may be pursued with the seton, which, when the opening into the wound is small, will be found most convenient.

In many cases the introduction of a gold, silver or lead canula will be found to answer best in keeping open a wound for the escape of discharges from the maxillary cavity. When used, caution should be had that they be so secured as not to slip into the cavity. [Canulas are most usually applied where the opening into the sinus is made at the bottom of a tooth socket, and besides the precaution just mentioned, should be provided with a movable plug to prevent the food, during mastication, from passing into the antrum. They may be introduced also in cases of perforation of the nasal wall of the sinus, but are seldom used in openings made in other positions.

Cauteries are divided into actual and potential.] Actual cautery, or the red-hot iron, acts more powerfully and instantaneously than the potential cauteries, and was, for this reason, a great favorite with the ancients. Its use is free from some of the inconveniences of caustics; but we must be careful lest in some cases we excite thereby too great irritation. It is advisable in hemorrhages; but it will sometimes happen that after the separation of the eschar the hemorrhage will recur. [Actual cautery is the dernier resort in the arrest of hemorrhage, and its failure is not to be considered the fault of the surgeon, but rather as arising from a defective operation of the *vis medicatrix*, which fails to replace by a permanent impediment the temporary one of art. The surgeon here necessarily acts a very subordinate part. The obstruction of the eschar formed by the hot iron, the vital constriction caused by styptics, and the mechanical one of ligatures, will all prove unavailing, if nature does not provide a permanent arrest by the formation of a plug of organized matter, against the time of the separation of the eschar, cauterized surface or ligature.] Potential cauteries or caustics may be used in substance, as the chloride of zinc, potassa cum calce, caustic of Celsus, [nitrate of silver,

caustic potassa, arsenic, and sulphate of copper;] or in a fluid state. Of the latter class are the sulphuric, nitric and hydrochloric acids, either diluted or undiluted. [Nitrate of silver is very much used in solution; and caustic potassa, from the rapidity with which it deliquesces when applied to the body, may almost be considered as a fluid caustic.]* The action of the saliva and other secretions upon these caustics, solid and fluid, and the readiness with which they may mingle with it, thus exciting a much more extensive irritation than is desired, should render us very careful in their use about the mouth.

The above remedies are preferable in the destruction of caries, fungus and exostosis, than the more inert kinds, such as oil of cloves, oil of cinnamon, balsam of Fivraventi and that of Commandeur. Not only is their effect weakened by the surrounding fluids, but the repeated use of rasps and scrapers to obtain a fresh surface of bone on which they must act, is annoying and injurious. I do not proscribe these useful instruments, but I protest against their abuse. Ambrose Paré advises their use only where the bone is *large and strong*, which the maxillary and neighboring bones certainly are not. Celsus cautions us, in cases of caries, to guard against injuring the healthy bone: and many other authorities might I cite in favor of a very cautious use of these instruments.

I shall speak hereafter more in detail of the specific remedies which certain cases require. Their just administration is honorable to the surgeon, and most fortunate for the patient.

*The author makes some remarks upon caustics, as divided into oily and spirituous; but as such a division had its origin in the very imperfect state of chemistry in that day, we have thought best to omit them.



CHAPTER SIXTH.

PAIN AND IRRITATION OF THE MAXILLARY SINUS.

CARIES and other affections of the teeth and gums, are not always, as I have observed, the occasion of maxillary disease, whether simple or serious; this the observation of many distinguished men has shown. If we can meet disease in its outset, we may very often arrest its progress; and such may be our success if we address seasonable remedies, internal and external, to pain and irritation of the maxillary sinus. Blood-letting, regimen, diluent drinks, poultices, and, under certain circumstances, soothing fumigations, should not be neglected. If irritation and pain continue, the secretion of the sinus may become altered and assume a purulent character, the continuance of which in the sinus will give rise to unpleasant consequences. Under these circumstances, the art of the surgeon becomes necessary, and it will be his duty to adopt a method the most effective, and at the same time most agreeable to the patient.

M. Lamorier, impressed with such views, has deemed it his duty to preserve what some imprudent surgeons do not hesitate to sacrifice. For this reason he advises, in simple suppuration of the sinus, not consequent on caries or other dental disease, a lateral opening into the sinus, so that the patient may not be deprived of the use of sound teeth. But the success of this plan, in the case cited by Lamorier, should not warrant its general preference over the removal of even a sound tooth, much less in the case mentioned by M. Runge. In truth, it is not a little surprising that the latter author should, in confirmation of this operation for the preservation of good teeth, have adduced an instance of distention of the antrum in consequence of teeth completely carious. The operation of M. Runge is

therefore unsuited to the various congestions to which the sinus is liable, and in the above case deserves censure, not approval. The best means of treating certain forms of irritation and simple suppuration, independent of dental disease, will be shown by the following cases.

CASE I. *Irritation of the Left Sinus without Dental Caries.*—

In 1766 a patient came to me with violent pain, of long standing, in the left sinus above the second molar, which stood alone, sound and firm. The eye and cheek were evidently irritated, the gums very slightly so; pains were felt in the sinus and in the tooth upon blowing the nose. My prognosis was irritation of the lining membrane of the maxillary sinus, and I determined, rather than remove the sound tooth for the penetration of its socket, to pierce the lateral wall, introduce a tube by the nose and throw in suitable injections, such as barley-water and honey, or a decoction of mallows. Four days of such treatment brought perfect relief to the patient.

This patient had tried gargles, poultices and blood-letting; had been advised to have the sound tooth removed. But he had seen in the case of a knight of Malta the failure of this last operation, which though well followed by the usual measures, left him worse than at first; it was a long while before the knight obtained any relief, and then more through nature's resources than by the aid of art—an aid which, since the operation, he had come to despise.

I have treated many precisely similar cases with equal success. Some had had no rest for two or three weeks, some not for a month: in these last there was indication of incipient suppuration.

CASE II. *Irritation and Pain of the Left Sinus with Loosened Teeth.*—The same year a patient applied to me for violent pain and irritation of the left sinus, of long standing, accompanied by loosening of the teeth, a condition not unusual with them. She had applied to others for advice, and the removal of two molars had been urged. The floor of the socket had been penetrated and injections of barley water, &c. used; but they escaped by the nasal opening without any purulent admix-

ture, thus indicating that there was no serious antral disturbance. Constitutional fever was now set up, accompanied by irritation and inflammation of the nose, eye and palate, and in four days after the operation, suppuration was established—all, doubtless, occasioned by too precipitate an operation. The approved remedies were now employed, setons and dossils of lint, for about a year. The patient at last, disheartened and worn out with suffering, came to me, and I removed from the sinus a long seton about the breadth of a finger, covered in places with a tenacious inodorous fluid. To prevent irritation from the access of air or food through the now open orifice, I introduced into it a small piece of prepared sponge, and applied externally an emollient cataplasm. I directed the daily removal of the sponge and cleansing of the cavity with aromatic barley water. In eight days the patient came to me so far recovered that I discontinued my treatment, and in less than a month the opening was closed and the antrum perfectly healthy.

The pain and irritation in this case was due to the action of the loosened teeth upon the alveolar periosteum within the socket, which was thence transmitted to the periosteum of the antrum, and might be expected to yield after the removal of the offending teeth, to the use of gargles and emollient cataplasms. But in failure of these, might we not try injections through the natural nasal opening? It is attended with no inconvenience, and the following case shows that it may be eminently successful.

This same patient in 1771 came to me for a similar affection of the right side. In '76 this right sinus was somewhat painful, but as the annoyance was slight, the teeth firm, and she dreaded a double operation, I gave it no further attention. These teeth were now loose and this side affected, as the left had been. I removed the teeth but the disease still lingered; she was twice bled, and for fifteen days used poultices, gargles and soothing inhalations, but to no purpose. Upon failure of these, and inasmuch as the operations upon the left side had been so fraught with mischief, I proposed injections through the nose.

I used sweetened whey, with syrup of violets, and in twelve days a cure was effected, followed by no relapse.

The injections were at first clouded, and the patient discharged a mucus, more tenacious and high colored than natural, from which I inferred that, if only the ordinary well known simple remedies had been used, the disease might have assumed a graver character. Still, operations and complicated modes of treatment should be adopted only in cases of absolute necessity; so these injections should be resorted to only in failure of other simpler means. Forbearance, it is true, may be carried too far, but a surgeon must be possessed of judgment to guide him in all such cases.

Mercurial preparations, however carefully administered, are often productive of very unfortunate, unforeseen and unavoidable accidents: either because the disease under treatment has required certain forms and repetitions of this remedy, or in consequence of idiosyncrasy. The mouth, we know, is our surest criterion in judging of the constitutional effect of this agent. Under its use we find the mouth often irritated, inflamed, ulcerated; and nose, mouth and jaws all sharing its effects. The teeth may loosen and drop out unaffected by any caries, and considerable portions of the lower jaw have been known to be separated under its influence. Neither is this mercurial affection a temporary one, but is often more persistent than the disease which first demanded its use. [The mercurial symptoms of secondary syphilis, are, as is well known, far more unmanageable than the original disease.] Under the best treatment it frequently lingers in the system for six months or more, though perhaps under certain circumstances very obscurely developed. Thus may arise certain nodes and glandular swellings, which time, rather than medicines, will best dissipate; and thus during or subsequent to the treatment of venereal disease, may the maxillary sinus become irritated and inflamed—as the following case will show.

[If the administration of mercurial preparations, as practiced in that day by the French, seemed to our author to demand these precautions, what would he think of the practice of American phy-

sicians of the present time? The French surgeons administer calomel and its analogous preparations in smaller doses than the English, and the latter are much more cautious in their employment than the practitioners of our own country. But throughout the west, south-west and south, generally, and in individual instances over the whole union, it is employed with an indiscriminate universality, and a reckless and unnecessary profusion which language has no words too strongly to condemn.

As a cathartic in many cases, as an alterative in all, it is undoubtedly superior to any other one agent in the *materia medica*; yet this very excellence, so great and general, has given rise to an abuse, that has occasioned a universal popular prejudice against it and caused many excellent practitioners to give it too secondary and unworthy a place in their practice. Routine practitioners, who are such from ignorance, from either inability or indolent unwillingness to think, or from a bigoted and most unscientific attachment to a particular medicine, seldom employ a great variety of remedies: in their short list, mercurials and venesection almost always hold a prominent place; and indeed are, we regret to know, with some the almost sole resources in the treatment of the various diseases, modified by every variety of climate, habit and constitutional temperament, to which they may be called.

But if mercurial medicines be so efficient and so extensive in their action, whence, it may be asked, the necessity of caution in their use? Simply and sufficiently from their liability to produce certain peculiar local and constitutional effects which, as our author justly says, are often far more difficult of cure than the original disease. We cannot know, *a priori*, the degree of our patient's susceptibility to this specific action: a five grain blue pill may, in one case, occasion a salivation of the most aggravated character, while in another a continuation of minute alterative doses shall produce no effect that we can discern whatever. Patients have ere now been cured of syphilis for which this was long thought the only specific, and is still the best remedy, only to prefer the annoyance of their first loathsome disease to the miseries which the cure has entailed upon

them. The suffering from even slight salivation is considerable, and when of a severe nature it becomes such as none ever wish to endure a second time. Nor can we feel at all assured—so unmanageable is its progress either towards increase or decrease—that all cases will be mild, or that mild ones will continue such.

We object to half drachm, drachm and half ounce doses of calomel as wholly unnecessary; and for reasons above given we prefer, in ordinary cases, remedies which are not liable to be followed by such injurious sequelæ. If as a cathartic, jalap, will fulfil the requisite indications in its action upon the liver and the smaller intestines, aloes upon the larger intestine, or rhubarb, oil or epsom salts upon the entire alimentary tract, is it a sufficient excuse for the preference of calomel or blue mass that it is more accessible or more conveniently administered? As an alterative its exclusive use is more excusable, because our list of such remedies is meagre, but a course of alterative treatment is often most unnecessarily adopted, undertaken in many cases in consequence of utter ignorance of the disease on hand. Besides, we are now constantly gaining new eutropic remedies, which answer in some cases as well, and many others better, than the various preparations of mercury; prominent in the list are iodine and the iodides and hydriodates.

And now, with all our cautions given, we express our belief that mercury, in its various forms, is superior, in point of efficiency and range of applicability, to every other single remedy. But let not the physician be misled by his admiration for so excellent an article, and think that none others can, under any circumstances; equal it, or imagine that it must of necessity be an ingredient in every prescription. Let him also bear in mind the possibility of the supervention, and the unmanageable character of mercurial sequelæ.

In regard to its action upon the teeth, it can, from its insolubility, have no direct local effect, but indirectly it has a most disastrous one. There is far greater demand for dental operations in the United States than in England or Europe; and again, as we have stated above, mercurial medicines have been

more indiscriminately, profusely and injudiciously administered here than in any other country. We are not prepared to assert that the one is the cause of the other, but we would earnestly urge the DENTAL PROFESSION to the careful examination of the nature and extent of the connection between this professional abuse and this national evil. We are assured that to some extent they are connected, and for evident and undeniable reasons. That an agent which has such an effect on the secretive and absorbing functions, may influence the formation of the teeth, and impress them with certain characteristics to be seen after their eruption, is not at all surprising. Furthermore, in cases where the teeth are firm and strong, having suffered no such pernicious influence during their development, they may fall victims to mercurial treatment, not only from its action on the gums and periosteum, but by imparting to the secretions of the mouth a vitiated and acrid character, in consequence of which they act more readily upon the teeth, and cause caries.]

CASE III. *Irritation of the Right Sinus from the Use of Mercury.*—In 1766, a soldier with violent pain in the right sinus, the result of a course of treatment submitted to a year since. The teeth had so loosened during said treatment, that having no hope of keeping them, and had had most of them extracted. The pain still continuing, he had the first molar extracted, the socket penetrated, and injections used for three months, but without relief, their escape through the nose showing that the nasal opening was all the while free. The surgeons, discouraged, dismissed him, and bade him trust to time and nature for his cure—no very encouraging resources for a man distracted with suffering.

The patient suffered thus for four months, his only comfort being the certainty that his venereal disease was completely eradicated. He sought the advice of many physicians, of whom some told him that there were still traces of his original disease; others that it was incipient cancer; others that an opening into, and exposure of, the antrum would be necessary; but he preferred his present sufferings to an operation so terrifying, and from which he could see no advantage. M. Morand sent

him to me, and upon examination I formed very different conclusions. The gums were in healthy condition; there was no discharge of purulent or of bloody and acrid matter, but it was simply serous; the nasal opening was free; no fungus or ulceration, no exposure of bone. Injections passed readily into the nasal cavity, and in fact, as I told M. Morand, the failure of previous injections was, I thought, attributable to their too ready escape. I therefore closed the artificial opening, and made use of an injection of whey, manna and yolk of egg. The first injection was not retained; the second remained longer. At the close of the first day he discharged a thickened and slightly fetid mucus; in fifteen days he was cured, and for six months, after which I lost sight of him, he had no return of the complaint.

CASE IV. *Pain and Irritation occasioned by a Fall.*—In 1776, M. * * * *, surgeon, consulted with me in the case of a girl of sixteen, who, by a fall on the right cheek, had forced the molar teeth inward towards the palate. The hemorrhage was considerable, and for its prompt arrest I replaced the teeth, directing the patient to keep them in position by those of the lower jaw. She was bled, and other remedies were used for the relief of the swelling, ecchymosis and other effects of the fall. All went on well till the third day, when she expelled blood, the nose and lips swelled, and there was pain in the sinus. I then wished I had removed the dislocated teeth instead of replacing them, but would not now extract them, convinced that the present symptoms were a direct consequence of the fall, and therefore preferred to introduce injections through the nasal opening, causing the patient to lie on the affected side, that the injection might remain. At first much blood escaped, but less the second time. The injection used was medicated barley water. The patient passed a pleasant night, and the next day had much less pain and swelling. In eight days, under such treatment, being always careful to allow the injection to remain for some time, all pain subsided, and, with the aid of gargles, the teeth were gradually fixed in their sockets, and she has kept them till now, (1776.)

[The example of M. Jourdain in reinserting disarticulated teeth, is by no means worthy of imitation. Teeth, when removed from their socket, either designedly or by accidental violence, perhaps never form as complete a connection as at first, and in the great majority of cases where union appears to be established, it fails to be of long continuance. The above case must be regarded as an unusual one, nor are we assured that even here the replaced teeth were not ultimately sources of annoyance and irritation. What was here done by accident, has been more recently performed in the transplantation of teeth from one mouth to another, a practice which cannot be too strongly condemned. Analogous and equally reprehensible is the practice of partial luxation for the radical cure of tooth-ache. In both cases the chances are very great that the transplanted or luxated tooth will fail to re-establish vascular connection, and certainly can never form anew any nervous one. Almost necessarily, it will become a necrosed organ, and, as such, liable to give rise to alveolar abscess, &c. The practice is destitute of sound physiological basis, and can only be sanctioned by most peculiar attending circumstances.]

These four cases prove the advantage of allowing injections, under certain circumstances, to remain for a time in the cavity; and show the inefficiency of means heretofore approved, and the failure of operations which could not have met with the success ascribed to them, and which must often have resulted in mischief and loss of important parts.

CHAPTER SEVENTH.

RETENTION OF MUCUS IN THE MAXILLARY SINUS.

THE symptoms and causes of retention have been sufficiently dwelt upon in a previous chapter. Retention is where the fluid is secreted, and yet from some impediment at the natural outlet, or physical character of its own, cannot escape; when it fails to be secreted from the surface of the antral membrane, it is more properly suppression. It must be borne in mind, that an essential symptom of retention of mucus, is the non-escape into the nasal canals of injections made through any artificial opening; and, furthermore, that the patient cannot discharge through the nose any of the secretions of the sinus. The following cases will fully illustrate these views.

CASE I. *Retention in the Right Sinus, with Absence of all the Teeth of that side.*—In 1765, a patient, aged 55, of phlegmatic temperament, applied to me for a painful affection of the right frontal and maxillary sinuses. She could not blow the nose, and even a false step in walking gave great pain. The pain came in sudden paroxysms during the day, and often waked her at night. The eye-sight was affected, and the teeth of that side had been lost fifteen years before, in consequence of a wound across the cheek, the cicatrix of which was visible, extending from the malar bone to the angle of the lips, drawing the mouth considerably to one side.

Here was an opportunity to try the method of Lamorier; but though this would evacuate the sinus, might not fistula result, or the disease be liable to recurrence; for, as is shown by Lamorier's own cases, the integrity of the natural opening is not necessarily established. This is a very important consideration, and has not received sufficient attention. If, after a first

cure, the nasal opening still remains imperforate, the natural mucous secretions of the lining membrane of the sinus, having no means of escape, must necessarily accumulate. It may not, to be sure, be reabsorbed, as sometimes occurs in amputations; but as urine long retained in the bladder, or tears in the lachrymal duct, may give rise to fistula, so may it happen in this case. In all cases, then, of mucous retention, a relapse can only be prevented by restoration of the natural opening, or the permanent establishment of an artificial one. To return now to the case.

The patient could not blow the nose; had lost the teeth of that side; had no fistulous opening, consequently there was no purulent discharge. I first, though recognizing the necessity of restoring the natural outlet, attempted the lateral perforation of Lamorier. The severity of the pain occasioned by an unusual resistance of the bone, forced me to desist from the operation; and with similar want of success I tried perforation through the alveolar ridge. In view of these difficulties, I carefully reconsidered the case, concluded that it was a simple accumulation; and determined, for the first time on the living subject, to penetrate the natural outlet, and through it, convey my remedial injections. My practice on the dead body had given me confidence, and this seemed to me the only chance for relief. I proceeded as follows:

The patient being placed on a lounge, with the head thrown back, I first, with a solid sound or stilet, ascertained the exact position of the opening. I then took a hollow sound, about the size of those used for the nasal canal, but two inches longer, and more curved at the extremity entering the nostril. This I introduced into the right nostril, carrying its point under the middle turbinated bone. About two lines below this, towards the inferior turbinated bone, I encountered a duplicature of mucous membrane; raising the point of my instrument a little to avoid this, I came upon the opening of the sinus, which, by using some force, I penetrated. I then passed through the sound a barley-water injection, and dismissed the patient, the sound still remaining, till the next day; then I repeated the

injection, removed the sound, and requested the patient to blow the nose, by which she discharged a greenish and highly offensive mucus. I now repeated my injections, and as the outlet was free, did not allow the sound to remain. This treatment, continued for about six weeks, resulted in a complete cure, and up to 1775—a space of ten years—there had been no recurrence of the disease.

It is necessary to the success of this operation, to be acquainted with the different positions of the naso-antral opening, as they vary with age and the arrangement of the nasal fossæ. Repeated anatomical examinations will be necessary, and we must have, to suit all cases, a variety of sounds, differing in length, thickness and curvature; the smallest about the thickness of a pigeon's quill, and from that up to the average size of a straw. The better to ascertain the varieties of position of the orifice, we should be provided with a curved stilet of gold or silver, tipped with a small knob, and flattened at the other end for convenience of handling. It may be used with either hand, and should be easily bent, so as readily to adapt itself to the nasal duct; upon its curvature will depend that of the hollow sound. This hollow sound should, for convenience of introduction, as it is shorter than the stilet, have inserted into its larger end a piece of whalebone about two inches long, by which it may more conveniently be grasped between the thumb and finger; after the introduction of the sound, this may be removed.

After placing the patient in position, it will be advisable to syringe the nostrils, especially in those who use snuff. Then, with the lower end of the stilet against the chin, you introduce its knobbed extremity under the middle turbinated bone; as it advances, the obliquity of the instrument will be lessened, and soon it will encounter a fold of membrane; then raise the point, and it will immediately come upon the orifice. You are assured of its introduction into the sinus, when the instrument presses upwards, as it often does with some force, against the extremity of the nostril, and when, by pressing it backward and forward, you can give it no motion. When you wish to with-

draw the stilet, lower the extremity which presses against the upper part of the nostril and cause it to describe a semicircle.

The introduction of the catheter is in every respect similar to that of the wire probe. When we wish it to remain for a time in the nostril, it should be longer than when used simply for injection. Syringes for the sinus should be about two sizes larger than those for the lachrymal duct. For the removal of obstructions in the catheter we should be provided with a delicate and flexible stilet with a knobbed extremity; by introducing this we can remove such obstructions without the necessity of withdrawing the instrument.

If there is too great obstruction to the passage of the hollow sound, we should introduce stilets, gradually increasing their thickness, and allowing them to remain. Meanwhile the patient should be directed to draw repeated inspirations through the nostrils, and at each removal of the instrument to blow through that side of the nose, closing the opposite. In failure of these measures, we may without risk apply some mild escharotic for the enlargement of the orifice. The mode of its application will be described elsewhere.

[The favorite method of our author for the treatment of many non-malignant diseases of the antrum, has here been given in detail. In his, perhaps excusable, attachment to his invention, it is evident that he overrates the objections to the operations which he sets aside, and estimates too lightly the difficulties of his proposed plan of treatment. In the case just stated, our author twice desisted after commencing an operation—which, according to his own principles, as laid down in the introduction, should have been well decided upon previously—simply because of the pain inflicted. Such conduct we think unworthy of the surgeon, and we question if the completion of the first operation would have given as much pain as this attempt of a second, and subsequent resort to a third expedient.

The knife of the surgeon is an object of dread to the patient, and any attempt to avoid its use is certainly commendable. But in obviating pain of one kind, we should be careful lest we inflict equal pain or annoyance of another. We very much

question if the pain of dividing the soft parts under the lip, and penetrating the canine fossa, or that of removing a tooth and piercing its socket, be not really less grievous than the continued annoyance of the expedients sometimes necessary, as alluded to in our author's last paragraph. In deciding upon the relative merit of the operations of lithotomy and lithontrity for the removal of urinary calculus, the question of pain must unquestionably, in many cases, be decided in favor of the former; and did the decision rest on this single question, lithontrity could scarce be regarded the valuable acquisition to surgery that it really is. But the great peril of every operation by the knife for the removal of calculus—a peril which no skill of the operator, however it may lessen, can do away with—renders the matter of pain a subordinate one. Not so, however, in deciding upon the above named operations on the maxillary sinus. The penetration of the alveolus, canine fossa or nasal wall involves no danger to life or to the parts involved, and no great degree of prolonged suffering; neither is it so necessarily, as our author imagines, followed by fistula or other troublesome sequelæ; on the other hand, the natural naso-antral orifice is so inaccessible that, despite the directions of Jourdain, the most experienced and skilful will find the introduction of the probe a work of difficulty; while others, and by far the majority, will become discouraged by constant failures. The French Academy long since decided upon the inadequacy of the method of M. Jourdain to supersede the ordinary operations for accumulations within the antrum. We are of the opinion, however, that every practitioner will occasionally meet with cases where it will be found not only practicable, but the most advisable course.]

Retention is not always occasioned by obstruction, but arises sometimes from thickening of the secretions. In such cases, if we use injections in the manner above mentioned, they should be allowed to remain in the cavity for some time, that thus they may the more readily dissolve the glutinous secretion before it shall have time to become acrid and offensive. My method will not answer in all these cases; in some it must be

associated with additional measures; and again, in others, the operations of perforating the bony parietes of the sinus will be preferable. The following case will illustrate my remarks:

CASE II. *Retention in the Frontal and Maxillary Sinuses, with Venereal Disease.*—In April, 1766, M. de Luze, surgeon ordinary to the king, brought to me a syphilitic patient. The bones of the nose were exostosed; the cornea of both eyes opaque, and spotted with chancrous ulcers; the spongy bones, vomer and spine of the maxilla carious. A chancre in the right sinus emitted a very offensive odor; pus escaped from the frontal and maxillary sinuses, and in the latter there was much pain; the sense of smell was lost. The bicuspides and first molar had fallen out from the effect of mercury, of which he stated that he had taken some fifteen hundred pills or capsules, but, either from neglect of proper regimen, or inappropriateness of the remedy, without success. The canine tooth was very loose, but the alveolar arch and the membrane covering it, and the palate, seemed healthy. The lower jaw was affected neither by the disease nor the mercury.

The removal of the canine tooth was followed by a discharge of fetid, purulent matter, proving a partial destruction of the anterior wall of the antrum. Through this opening I threw injections into the maxillary cavity, but they passed immediately out into the nostrils, and were thus unavailing. I then prepared a canula about four inches in length, pierced with numerous holes, which, when introduced into the antrum, should extend through its nasal opening—much enlarged in this patient by venereal erosion—as far as the frontal sinus, and terminate there by an extremity of smaller size than the body of the canula. This I introduced through the canine opening, hoping by means of it to inject both frontal and maxillary sinus, and to retain the injections in the latter.

My injection was barley-water and honey, with yolk of egg and a little *eau vulnerarie*.* [The prescriptions of older writers

* This term, elsewhere translated “vulnerary water,” was a healing solution for dressing wounds, in common use among the older French surgeons; its composition is unimportant, since it has long since given place to more efficient applications.—*Tr.*

will be found generally open to the objection of useless complication. We presume that the object of the yolk of egg in the present case is to give greater consistence to the injection, that it may remain for a longer time in contact with the diseased parts. If a simple detergent purifying action is required, a mixture of borax, water and honey will answer the indication admirably, besides acting as a gentle healthy stimulant. If a more powerful corrective of offensive discharge be required, a solution of alum or of chlorinated soda will answer; and as a stimulus to supplant diseased action, we recommend a solution of the sulphate of copper or nitrate of silver, varying in strength accordingly as required.] The first injection returned through the mouth, charged with purulent matter. The second was administered with the head thrown back, and immediately after I stopped the lower orifice of the canula with a piece of sponge, directing the patient to avoid blowing the nose for as long a period as possible. Thus, though I could not expect to retain the injection in the frontal and nasal cavities, I accomplished this object in the antrum, and in this way moistened and saturated the membrane, and relieved it, in a great degree, of the purulent secretion.

At the next visit, much pus escaped upon removal of the sponge from the canula. I made a second injection, and on blowing the nose, the patient discharged a mucous hydatid, which seemed to him to come from the frontal sinus. After this the passage of the nostrils felt freer. On the same day I touched the parts with mercurial water, and made a mild injection, which I allowed to remain. Friction with mercurial ointment promptly removed the exostoses; the ulcers were touched with a solution of sulph. zinci xx grs., arsenic ij grs.; and an eye-wash of rose-water and decoction of plantain was ordered. These measures, with the specific anti-venereal treatment of M. de Luze, gave great relief to the patient. The suppuration became more healthy, the mucous membrane less spongy, and the spine of the superior maxillary became detached from the healthy bone below. This fragment of bone I thought necessary to remove; and for this purpose, raising the lip, I

made an incision from the canine tooth to the central incisor, through which I withdrew, with forceps, the entire piece. The canine opening into the antrum being now too large for my canula, I prepared a second, of larger size, and touched the fungous edges of the opening with caustic. After a time I withdrew the sound; and, after eight days' employment of simple injections of mercurial water, left the recovery to the resources of nature. In July of that year, he was in the enjoyment of excellent health—has since married, had many healthy children, and his wife is free from any disease; thus proving that all vestige of his old malady is completely eradicated.

In these two cases I have avoided unnecessary detail, confining myself to the most essential feature. We learn that maxillary disease is not necessarily dependent on dental caries. The first patient lost all the teeth adjoining the affected part, fifteen years before; the second had lost them from the effects of syphilis and mercury, but not from caries. We see also the advantages of the hollow sound or catheter. But notwithstanding these advantages, a cure could not have been effected without collateral constitutional and topical remedies, for the arrest of specific disease, caries, exostoses and chancrous ulceration.

My design is rather to establish the possibility of sounding the maxillary sinus through the natural nasal aperture, than to contend for its universal applicability, to the exclusion of additional measures. Again, I cannot but believe that the effect of injections which immediately escape is sometimes too slight, and I, therefore, to give them greater permanence and action, often close any artificial opening which may exist, and pass my injection through the nose. The following case is given in illustration of this:

CASE III. *Purulent and Mucous Retention, with Fungous Growth in the Sinus.*—In 1766, the sub-prioress of La Magdelaine consulted me for an adematous swelling of the left cheek. There was difficulty in blowing the nose, loss of smell on that side, and a dimness of the sight. The breath from the nostrils

was offensive, and there escaped from between the third molar and the alveolus, a fetid, ichorous matter. From the third molar to the bicuspidæ there was a considerable tumor, which I attributed to the perhaps careless removal of the latter teeth some fifteen years previously; for, as I suppose, the ruptured lymphatic vessels then poured out a secretion, which had gradually increased with age. [This crude explanation of a non-inflammatory swelling is based on the old notion, now known to be false, that no deposition or secretion can take place, except from the open mouths of vessels, or in case of their accidental rupture. Lymphatic vessels, as well as arteries and veins, are severed in every solution of continuity, and yet we find no such lymphatic depositions necessarily consequent.]

Convinced that in the antrum was to be found the cause of all these symptoms, I removed the third molar tooth, in the hope that there might be a communication between its socket and this cavity; but in this I was mistaken. I now was obliged—so much had it increased within the last three days—to open the alveolar tumor, by which operation I gave vent to the ichorous fluid in the antrum. Through this opening I introduced my finger and discovered, on the central portion of the nasal wall of the cavity, a considerable fungous growth. I touched this with the mercurial water, but to no purpose; yet, impressed with the idea that it arose simply from the membrane, and was not complicated with caries, I feared to apply the actual cautery.

After six weeks unavailing employment of the usual remedies, I had recourse to dossils of lint, saturated with the balsam of Commandeur, turpentine and yolk of egg; but the pain thus excited caused me to abandon them on the third day. I now determined to give to my injections, by stopping the alveolar opening and passing them through the natural aperture, a chance of remaining longer in the cavity. I used a variety of caustics in destroying the fungous growth, and for my injection a mixture of barley-water and honey, with turpentine and yolk of egg. Suppuration was soon established, in fifteen days the symptoms were much abated, and there was flattering hope of

recovery. At the end of six weeks, the discharge assumed a lymphatic character, and I left the alveolar opening to heal, and used simple injections of vulnerary water and honey of roses. This was continued for eight days; then, for thirteen days, dilute mercurial water, which completed the cure. These external applications were seconded by the use of internal remedies, under the direction of M. Thuillier, surgeon of the Priory.

[Had the injections of our author been simpler and more active, it would not have been necessary to retain them so long in contact with the cavity. A solution of nitrate of silver, passed through the opening in the alveolus, would have destroyed the fungous excrescence, established a healthy action in the membrane, and rendered the cure not only more simple, but much less annoying and tedious.]

CHAPTER EIGHTH.

OBSTRUCTION AND OBLITERATION OF THE NATURAL OPENING OF THE MAXILLARY SINUS.

IT is evidently essential to the healthy performance of the functions of the mucous membrane of the sinus, and the escape of its superfluous secretion, that it should have some external communication, either through the natural nasal opening, or, in case of its closure, through some fistulous one: hence the necessity of restoring, if possible, this natural opening when obstructed. [All cavities lined with mucous membranes, have some direct or remote external connection; while closed cavities, as those of the pleura, pericardium, peritoneum, the various articulations, &c., are lined by a more delicate arachnoid or serous membrane. The access of air is as pernicious in the one case as it seems necessary and salutary in the other; and in this salutary action we find an argument in favor of the author's suggestion to restore the opening of the antrum.] Such obstruction may be the result either of antral or of nasal disease. A few cases will be useful to illustrate this acknowledged yet neglected duty of surgery.

CASE I. *Fistula of the Sinus three years after apparent cure of the original disease.*—In 1770 I was in consultation with the late M. Morand, in a case of alveolar fistula, with some slight discharge; the antrum was in good condition—there was no fungus, polypus, or other affection, and the nostrils were in a state of health. I suggested to M. Morand the probability of a closure of the nasal opening; and of the truth of the conjecture we were both convinced, on the introduction of the stilet; it was then decided that I should attempt its destruction.

This patient, (a resident of Tours,) had, in 1767, submitted to the ordinary course of treatment for maxillary disease, occasioned by the fangs of two carious molares. At the end of three months he had been dismissed by his physician, with the assurance that the opening in the alveolar border would close in time, and a direction to make use, every morning, of injections of Barrege water. After the lapse of a year, the opening, though small, still existed; there was a somewhat acrid and fetid discharge through it; he experienced, and especially in damp weather, a sense of numbness in the sinus. Wearied at length with this state of things, and seeing no probable termination, he sent to a friend in Paris a history of his case, in January, 1770; and in April of that year, came in person, and submitted himself to our treatment.

I cauterised the walls of the alveolar fistula, which had grown callous from long standing, with a view to excite a new action, and promote closure. I then introduced, through the nostril, the curved stilet, and, by the use of a little force, caused it to enter the cavity of the sinus through the natural orifice. The operation gave not much pain, and I left it in the sinus for two days. That there might be no impediment to the healing of the fistulous canal in the alveolar ridge, I made all necessary injections through the opening which I had thus forced; and in twenty days the patient had no farther need of my services. Whenever his business calls him to Paris, he visits me, and there has been no recurrence of his disease.

CASE II. *Complete Closure of the Nasal Opening.*—In 1773, a patient (from Lyons) asked my advice for a dull pain in the region of the sinus, with impeded action of the nostrils, felt for the last four years. Two years previously a nasal polypus had been removed, with great success and relief. He had consulted others about these symptoms, and as no new polypus was visible, had been exhorted to patience, and advised to use soothing applications.

After careful examination I could detect no polypus, nor any mal-condition of the teeth, except in the second molar of the right side, which had a dark hue. The pain experienced

ended in a numbness extending from the second molar to the canine, and the attempt to blow the nose was attended with a painful shock to the sinus of that side. I suspected this to be a case of mucous retention, and, after some persuasion, gained the patient's consent to the removal of the discolored tooth; and immediately a purulent sanguineous matter was discharged. The bone in the interior seemed nowhere exposed, and I used soothing injections; but the annoying symptoms still continued unabated, and the patient began to regret the loss of the tooth, although he had seen for himself that its roots were diseased.

I now gained permission to examine the right nostril, suspecting some defect of the naso-antral opening, and soon found, on introducing the sound, that it was closed by a protuberance which I had met with in no previous case. Assuring the patient that a cure could not be effected without removal of this excrescence, and that its increase might result in very serious consequences, I, with his cheerful consent, proceeded to its destruction, by introducing, through a hollow sound, a delicate wire, the end of which was wrapped with cotton and dipped in sulphuric acid. With this I touched the excrescence at intervals of two days, lest too great irritation should be excited. After the seventh application, conjoined with the insufflation of soothing fluids through the nose, I could with ease pass my sound into the sinus; which I did, allowing it to remain three days. Fifteen days' use of suitable injections, &c., closed my treatment of this case; and I have been assured, by citizens of Lyons, that the patient is well, and has never had any recurrence of unpleasant symptoms.

These two cases will show the possible advantage of restoring the obliterated opening. Analogous operations are often performed upon the lachrymal and salivary ducts. Moreover, the use of escharotics in those latter cases should certainly remove any hesitation in employing them about the antrum; especially if we use them with caution. Besides, as every enlightened surgeon must know, the most powerful caustics, and even the hot iron, are used in some cases of disease in the nasal fossæ.

It may be objected, that I do injustice to the resources of the healing art. Then let that art show remedies more efficient than mine. I have in vain searched both ancient and modern authors for such; and I could not presume to imagine that the peculiar circumstances demanding such remedies had fallen alone under my single observation. Errors of treatment have been acknowledged, yet suffered to continue; and where authors have been at a loss how to proceed, they have preferred silence: then why not, in such cases, venture to differ in opinion, or suggest new remedies, which, in the hands of the prudent and skilful, cannot be productive of evil, but always of good, results.

It may again be objected, that I do not restore the natural opening, but make an artificial one. But, granting that I do so, if it answers the purpose better than the ordinary modes of treatment, and bring relief to the patient, surely it is not to be rejected. The difficulty, impossibility or uselessness of the operation, are objections which are answered by the cases detailed; I have met assertions by facts. Lastly, it is said that my method of cure is a disagreeable and painful one. But granting the existence of these, though they differ greatly in different individuals, if a surgeon is to be restrained by fear of giving pain, he must refrain from all operations, even the simple one of venesection. When my objectors show plans of treatment better, and at the same time less painful, than my own, I am willing to yield; but I seek an explanation of the terms, "received remedies," (*moyens connus*,) so much used by them.

When one is skilled in sounding the antrum, they will be able, in cases where disease therein is suspected, and the teeth are sound, to decide upon the propriety of this or that operation. The following are cases in illustration.

CASE I. *Injudicious Perforation of the Antrum*.—In 1769, a patient consulted me, who, for supposed disease of the sinus, had had two molares removed, and a perforation made into the cavity. The usual remedies had been resorted to, but to no avail. I found the nasal fossæ healthy, the opening into the antrum free, and in the antrum itself nothing but a slight denu-

dation of the periosteum, which I attributed to the injudicious use of instruments. The discharge came, I was confident, from the nasal and ethmoidal sinuses, and not from the maxillary. I, therefore, in the presence of MM. Poissoner, Desperriers and Morand, advised the closure of the alveolar opening: my advice was followed, and the patient recovered.

CASE II. *Pain in the Sinus from Amenorrhœa.*—In 1770, a young woman, aged 22, of melancholic temperament, had complained of violent pain in the left sinus for four months; also of pain in the teeth, ear and cheek of the same side, and in the head. The eyes were irritable, and the nasal discharge slightly fetid. I was requested to sound the sinus, in doing which I could detect no abnormal condition. The symptoms appeared to me to indicate some congestion of the entire mucous membrane of frontal, ethmoidal, nasal and maxillary sinuses, [affecting, by continuity of surface, the ear through the Eustachian tube, and the eye through the lachrymal duct,] all dependent, in my opinion, on disordered menstrual function. By a restoration of this, and the additional application of a blister to the back of the neck, the patient was completely restored without resource to operations, which, if not very painful, would certainly have proved useless in removing the present cause of complaint.

CASE III. *Pain from a Nasal Polypus.*—In a case where the pain from compression of a vesicular polypus in the left nostril caused the attending surgeon to suspect disease of the antrum, and request me to introduce the sound. I did so with much pain and difficulty, but found no evidence of any disease. The entire relief consequent on the removal of the polypus, proved the accuracy of my opinion.

CASE IV.—In 1774, a lady applied to me for severe pain of the right sinus, accompanied with sense of heat and tingling in the cheek and alveolar surface. The teeth were sound, and had been well taken care of; nor was there any perceptible cause for the symptoms. I proposed sounding the cavity, which, in consequence of partial closure of the opening, was attended with considerable pain. The removal of the sound

was followed by the escape of several flakes of bloody and very offensive pus. Convinced of the existence of a purulent deposit in the antrum, I sought for some defective tooth, by the removal of which I might give it vent. I could detect no difference in their sensibility, but noticed, in the second molar, that the enamel was darker and fissured; on these grounds I urged its removal, and immediately there escaped an exceedingly offensive purulent discharge from the sinus. The extremity of the root of the tooth was exostosed, its canal of dark color, and its pulp in a state of suppuration. A cure of antrum was effected in six weeks after this operation. These observations establish conclusively, I think, the advantage of the sound in predetermining the propriety of operations on the sinus.

CHAPTER NINTH.

ENGORGEMENT OR DROPSY OF THE MAXILLARY SINUS.

THE maxillary sinus is, as I have before said, liable to two kinds of depositions: one purulent inflammatory and painful; the other lymphatic and indolent. The secretion of the first is corroding to the osseous structure which it infiltrates and gives occasion to fistulas: that of the other simply distends the bone, softening it and causing external tumors, which yield to the pressure of the finger, and return on the removal of that pressure with a crepitating sound, indicative of the still existing integrity of the osseous tissue.

Before entering upon the demonstration of these principles, I shall examine if the symptoms of this disease are such as I have stated, and for this purpose I shall concisely detail a case which has been considered a model worthy of imitation, as regards the treatment to be pursued in all such cases. In justice to myself, I would have it thought that the force of truth and not a spirit of contention, urges me in presenting objections where I feel bound to differ. "A woman had an indolent tumor on the right cheek, about the size of a pigeon's egg, occasioning much disfigurement, but altering the color of the skin very slightly. The patient had often suffered violent tooth-ache on this side, and, though young, had now few teeth remaining and these all carious; otherwise she was in very good health. The tumor was prominent towards the cheek, palate and nostril, yielded on pressure, and gave a slight noise as it returned to its position. These symptoms caused M. Runge to suspect the collection of some fluid, which it was necessary to evacuate and follow with suitable injections. For this purpose the cheek was drawn aside and an incision made into the bone

above the gum with a bistoury, enlarging it before and backwards, till a sufficient opening was obtained, from which escaped an inodorous mucous fluid. The bone was at no point denuded of membrane, the wound was dressed with a pledget of lint saturated with spirits of wine, and the next day the patient was better: on the third day she was feverish, the sinus swollen and painful, and the discharge acrid and fetid. These symptoms were controlled by proper remedies, and after twenty-four days the walls of the sinus were nearly restored to their normal condition.

"The canine tooth of this side being very obliquely situated, M. Runge thought proper to extract it, and thereupon followed an escape, through its socket, of fluid contained in the sinus, though the tooth itself seemed perfectly sound. Through this orifice injections were made; the opening made into the external wall healed promptly without any exfoliation; in six months the tumor entirely disappeared and the patient was cured.' "

One cannot fail to see the uncertainty, not to say obscurity of the treatment here adopted. Though all the teeth were carious and their extraction thus plainly indicated, an incision into the external wall of the antrum, or more correctly its destruction, was determined upon; the result we see in the symptoms which supervened on the third day, which were, perhaps, hastened by the use of the spirits of wine. We have here a canine tooth quite displaced and involved in the tumor; yet it was long before the idea of its extraction occurred, though the subsequent discharge through its socket proved how advisable it would have been at the commencement of the treatment. In this way the time of cure might have been shortened by half. Some cases which have fallen under my own observation will show that this affection is not so rare as has been supposed, may teach us not to confound them with purulent collections, and may lead us to a more judicious course of treatment.

CASES I, II and III. *Distension with Softening of the External Walls of the Sinus.*—In 1769, I was consulted in the case

* From Baron Haller's Collection of Medico-Chirurgical Theses.

of a large tumor of the right cheek. The external wall was much distended and softened, and yielded to pressure, upon the removal of which it gave a sound resembling the crushing of an egg-shell. The nose was turned to one side, the nostril obstructed: yet the patient suffered no pain, and the skin, though distended, preserved its natural color. On examination of the mouth, I found that the crowns of the bicuspides and first molar were destroyed by caries, which induced me to advise the extraction of their persistent fangs: the patient consenting, this was immediately done. The shock occasioned by the extraction of each of the five fangs, caused a portion of fluid to escape from the sinus through the natural opening; it was thin, reddish, saline and inodorous, and in all about three spoonfuls. The tumor could now be made to disappear by pressure, but would again return to its full size: pressure caused no escape of fluid through the nasal, and but slight through the alveolar, opening, which was at the bottom of the first molar socket, and large enough to admit the finger. The internal membrane of the sinus was entire, except at the alveolar opening, through this I made injections of warm water strengthened with a little alcoholic vulnerary fluid. The next day I injected the sinus repeatedly with a decoction of agrimony* and honey of roses; meanwhile not neglecting external compression. In fifteen days the parts returned to their natural condition, all crepitation of the bone ceased and the discharge was very slight. I now had recourse to saturnine solutions, on the second day the discharge had ceased and the alveolar opening reduced to a mere fissure, and in a month from the extraction of the teeth the patient was fully restored.

II. A patient was brought to me, who had had for more than three months a tumor like the above, on the right side. The maxillary cavity was distended to a level with the orbital margin, the nose was turned to one side, and the vault of the palate was remarkably prominent. I removed the fangs of the two first molares, the crowns of which had been destroyed by

* A mild tonic and astringent herb, very commonly used in Europe as a gargle.—*Tr.*

caries, and which I believed to be the immediate cause of the disease. I then enlarged the opening at the bottom of one of the sockets, through which escaped a large quantity of a serous inodorous fluid, pressure upon the palate and external wall caused its escape through both the nasal and the alveolar opening, and these compressions, together with suitable injections as above, soon terminated the disease.

The teeth of the left side were in a similar condition, and I urged their removal but the patient would not consent. In three months she came to me with a precisely similar swelling of this side, which I cured in the same manner.

III. A woman who had had a large tumor on the right side of the face for six months, was brought to me. It compressed the nose, nearly closed the eye, and projected to a level with the malar prominence. The bicuspid and first molar were carious; but on attempting their removal with forceps, I found them so adherent to the wall of the tumor that I was in danger of removing the latter in my attempts. I, therefore, first carefully passed my lancet around between the fangs and alveolus, and then removed them without danger. The alveolar plate was of a membranous consistence, so that I easily pierced it, and gave vent to the fluid in the cavity; its escape was assisted by compression, and amounted in all to about four ounces. Injections of brandy and water with honey, together with graduated compression, effected a cure of this enormous tumor in two months.

These instances are sufficient to show the treatment requisite in all such cases. Patients under this disease suffer no pain, the skin over the tumor is rather pale than otherwise, and yields to pressure of the finger; almost always there are carious teeth involved in the tumor, usually exostosed at their extremities, and requiring extraction. Though the disease commonly yields to simple treatment, such is not always the case. The saturated membrane may become the seat of fungous, polypous or cancerous growth, as I have occasionally seen, and pass beyond the reach of art. Accordingly as the disease changes its character, will the remedies just proposed be inapplicable and others become necessary—this I shall hereafter illustrate.

Flat bones have, between two plates of compact tissue, an intermediate cellular structure or diploe, which may become the seat of fluid collections similar to those met with in the sinus, characterised by similar symptoms and arising often from the same causes. The following is a case of this kind.

CASE IV. *Tumor of the Upper Jaw mistaken for Lupus.*—In April, 1775, a Benedictine monk came to consult me for a tumor on the right side of the superior maxillary, about the size of a large nut. Its slight progress had caused it for some time to be neglected, but upon its sudden increase he sought the advice of a self-styled surgeon, who pronounced it to be a lupus, and treated it accordingly with caustics for three months. But spite of his promises he could not accomplish a cure, for as yet the tumor, though not quite so large as at first, was in no better condition. The monk then applied to M. Desnov, a surgeon celebrated for his treatment of lupus, who pronounced his disease to be of no such character, but seated in the bone; and referred him to me for examination.

The cheek was not irritated nor the tumor painful, the finger could compress it, but it gradually returned to its position with a distinct crepitation. This compression caused an escape of fluid around the fang of the canine tooth, and the first bicuspid which was loose; I therefore decided upon their removal in the expectation that thereby I might gain a sufficient opening for the evacuation of the sinus. But in this I was mistaken, the fluid was evacuated only upon compression of the tumor, the alveolar partitions were completely softened, but the alveolar floor of the sinus was so firm as to lead me to suspect that this cavity was not involved, besides there were no other symptoms of any such involvement. In sounding the alveolar sockets with a very flexible stilet, it passed unexpectedly into a fistulous canal at the posterior part of the side of the socket of the first bicuspid; which canal extended as far as the malar bone, involving the external plate of the wall of the sinus more than the internal. The fistulous opening seemed to me too contracted for the free escape of matter, I therefore made an incision along the side of the alveolar ridge three-fourths the length of

the base of the tumor. Under the employment of the injections mentioned in the last case, the patient recovered in about five weeks.

Singular as the above case may seem, the following are more so, and show moreover that carious teeth are not always the cause of the diseases in question, and that there are certain freaks of nature which, unless we deny the evidence of facts, we cannot doubt.

CASE V. *Distension of the Sinus from the Presence of the Crowns of two Molar Teeth.*—In 1771, a milliner brought to me one of her apprentices, aged sixteen, of small stature and a phlegmatic temperament. She had had for some months a very large, hard swelling of the right cheek, without any pain or change of color; the palate was in a natural state, but the alveolar ridge very much distended; the first molar had been lost, but the second and third had not yet appeared, the bicuspid, canine and incisores were sound.

The external wall of the sinus was so swollen as to fill the whole space below the malar bone, and the nose was turned a little to one side. I could discover no remnants of decayed teeth, nor had she received any fall or blow on that side. Various but ineffectual remedies had been recommended. I was convinced from its yielding to pressure and the crepitation produced, that the tumor—about the size of a hen's egg—contained some fluid, and for its evacuation, I determined upon a simple incision at its lower surface. The fluid discharged resembled that of the preceding cases. The bone yielded to compression, which I applied at intervals till I could force out no more of the contents of the cavity. I used a simple injection of warm water, and applied a piece of prepared sponge to the wound, directing the patient to make, from time to time, such compression as she had seen me use.

The next day I found the tumor as large as at first, and at once saw my two-fold error: I had neglected permanent compression, and by the wax of the prepared sponge had prevented the escape of matter. On the removal of the sponge, a fluid escaped just as at first. I then introduced a sound into the

cavity, and discovered that the inner surface of the external wall of the cavity was denuded. On its entrance into the sinus, my sound struck upon two loose bodies, which, on pressing gently, were lost in the cavity. After many trials, I succeeded in bringing them to the alveolar opening; and on removing them with forceps, found, to my surprise, that they were the crowns of the first and second molares, with their usual prominences and enamel, but without fangs.

There now escaped from the sinus a considerable discharge, more colored than at first, but not at all fetid; and the patient could blow the nose freely. I substituted for the prepared sponge a medicated pledget of lint, in order that the opening might be preserved, and yet the sinus be free to evacuate its contents; and applied a graduated compress, confining it with a bandage. In less than fifteen days the tumor was sensibly diminished, the discharge lessened, and its color and consistence improved. I persevered in the same treatment, and found, as the external wall was restored to its natural size, that its density increased, and its internal surface was restored. Towards the sixth week, the cavity had nearly assumed its natural size; the injections passed freely into the nostrils, and the alveolar opening was much lessened. The discharge became slight, and after substituting a canula for the pledget for about fifteen days, it ceased altogether, when I used a simple mercurial injection; and in about three months I dismissed the patient. There has been no recurrence of disease, and there exists no deformity.

The cause of the disease in this case, singular as it may appear, is analogous to instances sometimes met with, where the third molares are found fully formed and imbedded in the jaw, even of persons advanced in life. The canula is only admissible where the fluid is not too thick to escape freely; nor should it be allowed to remain too long, for fear of rendering the edges of the opening callous, and thus establishing fistula. It should also be so shaped or secured as by no chance to slip into the sinus.

The two following cases, though having no immediate con-

nection with the antrum, are, from their close analogy, deserving of a place here.

CASE VI. *Distention of the Maxillary Parietes from an Imbedded Bicuspid.*—In 1771, M. Petit, physician, sent to me an old man of 60, who for several months had been exceedingly annoyed by a tumor of the right superior maxillary, with a deep ulcer at the upper portion of the gum. The tumor was the size of a pigeon's egg, and the nostril completely closed. In the centre of the ulcer, which was very painful, was a whitish body, hard and very smooth; yet from the age of the patient I could scarcely suspect that this was a tooth arrested in its downward progress. I found I could move it slightly, and after some effort so far loosened it as to be able readily to remove it with the forceps. It proved to be the crown of the second bicuspid with about one-third of the fang, which had lain transversely in the alveolar ridge till it had thus pleased nature to seek its expulsion. The act of blowing the nose forced from the cavity a spoonful of fluid, turbid and slightly fetid. The tumor yielded under the finger; and as the patient would not submit to an enlargement of the opening, I was forced to be content with ordinary daily compression, and the use of suitable gargles. In about eight days the tumor had subsided, the ulcer nearly healed, and the cavity of the tooth almost effaced. Three or four months afterwards I saw him: he was perfectly well, and thought no more of his complaint.

CASE VII. *Distension and Softening of the Maxillary Parietes, from the Retention of a Tooth of singular formation.*—In 1774, M. Geoffroi, physician, sent to me a delicate young girl of 13, who had had, for about a year, a considerable tumor in the region of the incisive fossa of the superior maxillary. From absence of all discoloration of the skin, or of pain, it had not received much attention; the carious state of the temporary molares had been assigned as its cause, and had been accordingly removed, but to no purpose. The temporary canine and incisores had fallen out naturally, and been replaced with the permanent teeth, except in the case of the lateral incisor, which had as yet never made its appearance. Ignorant of its origin,

no one dared to treat the disease boldly. Poultices were ordered, but the tumor still enlarged, till it stood even with the orbit, turning the nose to one side, and contorting the jaw.

In this condition I first saw the patient. The tumor, as far as I could expose it, yielded to pressure, which occasioned crepitation; the mouth was otherwise healthy; the child was tormented with a slow fever, which, as the glands of the neck and axilla indicated no scrofulous tendency, I ascribed solely to the tumor. What might be the nature of the contained fluid I could not say, but it seemed to me to demand evacuation; and for this purpose, as the central incisor was loose, though apparently sound, I removed it. Its root was nearly denuded of periosteum, and on its extremity was a transparent, amber-colored growth about the size of a pea; its removal was followed by the discharge of two spoonfuls of a glairy, yellowish fluid. I enlarged the opening in a lateral direction, and laid gently into the hollow of the tumor, which was considerable, five dossils of dry lint, each about the size of the little finger. In subsequent dressings I used an injection of decoction of barley, honey of roses, and vulnerary water, and charged the dossils with yolk of egg, honey and balsam of Commandeur. [The injection was of but little service, and the dossils of lint worse than useless. There is evinced here, as elsewhere in the practice of our author, too great a disposition to interfere with, and unnecessarily to seek to aid, nature's curative process.]

A few days after this, I was perplexed by the detection of a firm, compact body in the centre of the posterior part of the cavity of the tumor; yet there were no symptoms that could give rise to a suspicion of caries of the bone; and I found that the motion which I could give to this body was communicated to the palatine arch. I determined to continue my treatment, and wait the progress of the case. The tumor became gradually smaller, and the unknown body now loosened; with some assistance on my part, left its attachment to the bone, and became free within the cavity; on carefully removing it, I found it to be a tooth, which on its anterior aspect resembled a lateral incisor, but its posterior surface, instead of being flattened as

usual, was rounded, and terminated on its inferior surface by four rounded tubercles; the root was about the size of that of a temporary canine, and diverged from the line of direction of the crown. The bicuspid and permanent canine had appeared, so that this could be no other than the lateral incisor, irregularly developed. By recurrence to the first exploration by the sound, I conjectured that the grinding surface of this singular tooth had been placed against the posterior part of the root of the central incisor, with its fang obliquely developed. After the removal of this offending substance, the tumor gradually healed. I lessened, one by one, the dossils of lint, ordered gentle compressions, and administered suitable injections. In about three months I obtained a complete cure, without any loss of osseous tissue.

CHAPTER TENTH.

DIFFERENCE BETWEEN SUPPURATION WITHIN THE SINUS AND THAT IN THE MAXILLARY TISSUE.

THE surest indications of a purulent collection in the antrum are—severe and continued pain in this cavity, similar to that of phlegmonous swellings in other parts of the body; the extension of this pain to the nostril, cheek and orbit of that side; the difficulty of blowing the nose, and the escape of purulent matter upon its painful performance; offensive exhalation from the nostril, &c. A concurrence of these symptoms would leave no doubt of the nature of the affection.

But when pus forms in the maxillary or alveolar tissue, the corresponding teeth are loosened, and in consequence of the thickening of the dental and alveolar periosteum, they are elongated. The attachment of the teeth is sufficiently loose as to allow, especially upon applying upward pressure to the tooth, the escape of purulent matter around its neck. Each of these distinct affections may become complicated with the other; maxillary suppuration may, by perforation of the floor of the sinus, involve that cavity in disease; and purulent collections in the antrum may, where the bone is denuded and caries results, infiltrate the maxillary and alveolar tissues.

Infiltration of the osseous tissue is usually preceded by parulis—gum-boil—or by epulis, a hard tumor of the gums; and on the removal of the offending teeth there will generally be found, on the extremity of their fangs, a sarcomatous tumor, [known better as dental exostosis. This, and necrosis of the tooth, are the most common causes of epulis, parulis, and all their subsequent symptoms.] There is an intimate connection, from sympathy of contiguity or contact, between all the peri-

osteal tissues of the jaw, so that irritation or inflammation of one part may be readily communicated to others. Again, through the medium of the dental branches of the maxillary nerve, the teeth hold an intimate nervous connection with the whole face; it is in consequence of this that a single tooth may occasion violent neuralgia and swelling of the entire side of the face.

Purulent matter is thus found in the substance of bone, either as the result of periosteal inflammation, or from disease of the bone itself, consequent upon the partial loss of periosteum; and will often make for its escape, canals more or less tortuous—this it does by virtue of its corrosive qualities. [Much is said by old writers of the corrosive properties of pus: in fact, it was long a favorite theory that purulent deposits increased at the expense of the surrounding parts, which were dissolved by it. Pure pus is a secretion; closely allied in composition to the blood, but less liable than it to decomposition; mild, inodorous, and altogether devoid of any irritating power over the living tissues. In appearance it is found to vary according to the tissues in which it is formed; being thin and grayish in bones; opaque and caseiform in cellular tissue; yellowish-gray in muscles; and flocculent in serous, and greenish and thready in mucous, membranes.

The formation of pus is one of the steps in nature's recuperative process; though often it is difficult to see the connection between its secretion and the cure proposed; and not unfrequently it is the immediate occasion of death. One feature, however, is very evident—that is its tendency towards an escape from the system. Like the urinary and biliary fluids, it is an *excretion*, which, once separated from the circulation, is not designed again to enter it: in proportion as it does so, it proves injurious, giving rise to a train of symptoms termed *hectic*. This outward tendency of purulent matter is aided by the vital operations of the system. We find barriers of lymph to arrest its flow in directions which would be hurtful; and again, where it may best escape, a way is gradually made by the process of absorption—not by virtue of any corroding action of the pus itself.

Like any other fluid, it may soften membrane, with which it is for some time in contact, and infiltrate the spongy tissue of bones, or the loose cellular tissue found throughout the body. When thus infiltrated, it is only more hurtful than simple serous effusions or dropsies, for the reason that it cannot, like them, be readily or with impunity reabsorbed. This tendency to spread along the loose cellular structures of the body, in which it usually gravitates downwards, and which is by no means always prevented by the formation of the lymph barrier above mentioned, gives rise to many serious and disastrous consequences, and makes it the imperative duty of the surgeon to give free and speedy vent to all purulent collections.] When the dental and alveolar periosteum becomes the seat of suppurative inflammation, and the presence of the tooth or fang prevents the escape of the matter, it must escape in some other way; either superiorly into the sinus, and thus involve that cavity in disease; or laterally, by a fistulous opening through the side of the alveolus; or into the cellular tissue of the bone.

In opposition to the existence of enlargement of the extremity of the root as a frequent cause of suppuration, it has been advanced that it is not found in five cases in the hundred. It is very true that where the irritation of caries does not extend to the fang, exostosis may not take place; but in cases where this irritation is thus extended, and where, moreover, the pulp cavity becomes affected, we shall be sure to find this enlargement at the extremity of the fang. [Enlargement of the fang may be osseous, and is then called exostosis; or of a less firm, cartilaginous or fleshy consistence; or it may be in the form of a sac containing purulent matter. They are all more properly to be regarded as consequences rather than causes of inflammatory action. In the case of exostoses, this inflammation is not always the result of dental disease, but may arise without any appreciable cause; there would seem, in these cases, to be a constitutional tendency to the formation of dental exostosis, for it is not uncommon to meet with it upon several perfectly sound teeth in the same mouth; there is a remarkable case detailed by Mr. Fox, in which it became necessary to remove every tooth in the head.]

CASE I.—In 1767, I was consulted for a severe attack of the right cheek, most of the symptoms of which had been allayed by regimen, venesection and poultices; and which, if the patient had consented, would have been completely cured by the removal of the fangs of several carious teeth. Upon compression of the gums, offensive matter escaped from around these fangs: in the absence of all symptoms of antral disease, I attributed all the mischief to the presence of these offending bodies, and insisted upon their extraction. I removed five roots, upon the end of each of which there was an enlargement. The floor of the sockets was solid, the periosteum swollen, the alveolar border softened and yielding to pressure. By the use of relaxing and detergent gargles, followed by gentle styptics, I soon effected a cure. The pus in the alveolar tissue had not formed there, but was the result of periosteal inflammation of the sockets; there was no exfoliation of bone, because there had as yet been no loss of periosteum, which might have happened, however, if the case had been much longer neglected.

CASE II.—In 1773, an individual sought my advice, who about two years previously had suffered a violent attack of the face, ending in parulis over the second bicuspid of the right side, which was carious. Under the use of poultices, depletion, &c., the general pain and swelling had disappeared, and the parulis was imperfectly cured; the tooth had been extracted, but it was broken in the attempt, and its extremity left in the alveolus. The abscess now healed, and the tooth socket filled up, excepting a small fistulous opening about the size of a pin's head, to which no attention was given. Still the gum, and subsequently the alveolar wall, was swollen and spongy, and upon pressure, pus was forced from the fistulous opening; yet there was no pain in the sinus, but a slight embarrassment in the corresponding nostril. In this condition I first saw the patient. I detected, with a probe, the presence of some foreign body: I therefore enlarged the fistulous opening, and with the forceps removed it; it proved to be the fragment of the extracted tooth. A part of the alveolar wall seemed to me to require the actual cautery; after which I employed the balsam of Fivra-

venti for some fifteen days, together with suitable injections : the parts soon returned to their natural healthy condition.

In 1777, I cured, in a similar manner, a servant who for seven years had had just such a fistulous opening over the fangs of the canine and first bicuspid. No further injury had, in all this time, accrued to the alveolar walls, than the destruction of the bony septum between the teeth. The slow progress of the disease in these two cases is doubtless attributable to the presence of the fistulous openings, by which the purulent secretion, in part or wholly escaping, was prevented from infiltrating the alveolar tissue.

Sometimes, when inflammatory action has been followed by periosteal suppuration, and infiltration of pus into the surrounding tissue has been allowed to take place, the extraction of the tooth will not suffice for the arrest of the disease, and the matter will seek other channels of escape. Again, if this softening of the maxillary tissue follow dental disease, and the antral membrane be also excited to suppurative action, and the tooth socket be allowed to close before the infiltrated matter shall have escaped, we shall then have the symptoms of suppuration of the sinus conjoined with those of purulent infiltration of the maxillary tissue : as in the following case.

CASE. III.—In 1774, I was consulted by a lady who had suffered many months since, a painful attack in the left sinus extending to the cheek, temple and back of the head. The discharge from the nostrils was sometimes dark, at other times greenish and formerly much more offensive than now. After the violence of the attack had abated, the first molar had been removed as the probable cause—it being carious. Its removal was attended with no difficulty, yet after the gum had healed over, she experienced a numbness, heat and pain in the spot, although the alveolar and palatine membrane presented a perfectly healthy appearance ; and thus, in much disquiet, she applied to me.

I confess, I knew not at first what to think. I could find no fistulous opening, but, just over the site of the lost tooth, I detected a small red spot like a slight sting of an insect ; but

the most delicate probe could penetrate it very slightly, and no compression of the alveolar border, which was very firm, could determine the escape of any fluid. By passing the sound through the nasal opening, I detected the presence of a small quantity of viscid and offensive pus.

Under the impression that this might be a case of purulent infiltration of the maxillary and alveolar tissues—of which I had seen many instances—I could not deem myself justified in attempting the cure of the antral disease simply by injections, through the nasal opening, or in fact, through an opening made into that cavity at any other point than through the alveolar arch, for in this way only could I, in case my impression proved correct, meet the demands of the two-fold disease. However, as the case was so obscure and serious, I urged the patient to seek additional advice. She did so, and was recommended by the consulting surgeon to have the third molar, a perfectly sound tooth, extracted; unfortunately it was broken in the attempt, and in such a way that the fangs could not be removed. In a second consultation with four surgeons, I stated my view of the case; and as my plan of operation met the approval of two of them, I proceeded at once to its execution in their presence.

I made a circular incision into the gum in the alveolar margin, and then, with a triangular drill, perforated the bone in the direction of the sinus. But, scarcely had I reached that cavity when, partly from a sudden movement of the patient, partly from the too brittle temper of the instrument, it broke just above the alveolar ridge, leaving the point of the drill so firmly fixed in the bone, that it resisted all my efforts to withdraw it. My anxiety and mortification were extreme, my patient had lost a perfectly healthy tooth and now had a piece of steel securely fixed in the maxillary bone. I was advised to wait patiently till nature should by the suppurative process, expel the offending body. This good advice, I for some days followed, but at length I thought of an expedient to hasten the process. This was to remove with a small trephine, that portion of bone in which the instrument was imbedded. I had nearly completed the operation, when I desisted, in consequence of the exhaus-

tion of the patient, the next day I found that its continuance was unnecessary, for the fragment of the drill had disappeared. We searched with the utmost care to assure ourselves that it had not passed into the sinus, and then concluded that the patient had unconsciously discharged it in the act of spitting, coughing or sneezing.

Suitable injections were used through a canula, inserted into the opening, but we discovered that in proportion as the parts approached after its removal the old symptoms returned, and, therefore concluded that it would be most judicious to permit this opening to continue, so long as there remains in the system an offending humor of which nature sought to rid herself. The canula was therefore returned, and the patient instructed in the use of simple injections, and although she became so accustomed to this, as to cease to consider it a trouble and was in the enjoyment of good health—still the cure must be regarded as incomplete. [The imperfection of this cure was not, we think, the presence of any peculiar “morbid humor in the system which here sought escape,” so much as the non-removal of the cause of the disease, whatever that may have been. Possibly the fangs of the third molar prevented recovery, it is certain that their removal was plainly indicated, when it was found, that from the continuance of a morbid secretion, the alveolar fistula could not be closed.]

I shall close this chapter by a case of purulent infiltration from the injudicious plugging of a tooth.

CASE IV. In 1773, a member of parliament, was advised by me to have a second superior molar, which was carious and painful, extracted. The cotton which he placed in its cavity, became in two hours offensive and coated with pus. My advice was not taken, for some one promised to restore the tooth by filling the cavity with lead. This operation was performed, and for a week or so, gave complete satisfaction, but about this time the tooth became very painful, was elongated and a high degree of excitement was set up in the parts around. The dentist, fearful of the failure of his work, advised depletions, regimen and poultices, but to no purpose, the tooth continued

elongated, and on pressing it upward, matter escape around its neck, of an acrid, fetid quality. Several other expedients failing to give relief, he came to me and I removed the tooth. The gum and periosteum was swollen, the alveolar tissue infiltrated, the condition of the latter induced me to advise the use of the actual cautery, but the patient would not consent, and I was compelled to resort to diluted oil of vitriol. In about fifteen days, the patient was restored.

I have met with very many cases of this disease dependent on simple caries, and have in such cases seen unnecessary perforations into the sinus, under the mistaken idea that this cavity was involved in disease. I have also seen the affection in question, occasioned by the splintering of the alveolar wall in the operation of extraction. [The sudden and repeated application of heat or cold to the teeth, or mechanical violence, may, by inducing inflammation of the dental pulp, give rise to alveolar abscess: and inflammation of the gums, arising from the presence of tartar or from whatever cause, may, if not arrested, extend to the dental and alveolar periosteum.] In deciding on the propriety of the actual cautery, much judgment is required, and it is more advisable where the bone is still invested with its periosteum. [The author might with more propriety have said, never advisable, except in cases of malignant disease of the bone, even when the necessity for its use is rare. The escharotic application in the last case, we regard as unnecessary; the removal of the offending tooth and the use of some cleansing astringent mouth-wash being all that nature required in the completion of the cure.

We have remarked upon the want of simplicity in the author's injections, gargles, etc. we would add that they are used to an unnecessary extent, often retarding instead of promoting the cure. This officiousness of surgery was the great error of that day; he was deemed a poor surgeon who was negligent therein. Fortunately for us of the present day, we are not compelled to resort to the farce of anointing the weapon in order to spare the wound from a well meant but pernicious host of salves, ointments and wrappings. Except in cases of constitutional vice or

debility, nature does not require much assistance in effecting the cure of surgical diseases after the offending cause is removed, and a way opened for the escape of necessary discharges. It is not simply necessary to know *what* to apply, but also *when* to apply it; and we question if ill timed interference has not been productive of as much evil as the misapplication of remedies.

The calling of the surgeon is a noble one, but he should remember that after all, he is only an assistant, and often a feeble one, to that all pervading power which we are pleased to term Nature. The most brilliant operations of art would fail if not seconded by nature; while on the other hand, most formidable injuries may recover with scarce any assistance from art. Let us not, then, by any useless or hurtful appliances, seek to claim to ourselves a glory which of right is due only to Him who has endowed our bodies with such wonderful powers of self-restoration.]

CHAPTER ELEVENTH.

DEPOSITIONS IN THE ANTRUM, WITH FISTULA.

SUPPURATION of the sinus may present itself under another aspect. The deposition of matter does not always determine towards the most dependent part of the cavity, owing, perhaps, to the position of the part first affected. Under these circumstances the purulent secretion is divided; a part seeks the lowest position, and a part escapes through the bone and soft parts by one or more fistulous openings. The removal of the offending tooth—supposing the disease to originate thus—will not, in such instances, always result in a cure, unless we resort to additional remedies; as the following cases will show.

CASE I.—In 1770, M. Missa, physician, sent to me a lady who had been for several months troubled with an inflammatory swelling of the right superior maxillary. A surgeon dentist, who had been consulted, had, for what reason I know not, declined removing the fangs of a number of teeth, the crowns of which were destroyed by caries. When I saw the patient, there was a tumor about the size of an olive, near the inner canthus of the eye, which had imperfectly discharged itself through an opening that remained fistulous. Acute pain was felt within the sinus; the mucus was offensive and purulent; yet neither the external wall or the palatine vault were softened or distended. The gums around the decayed roots were much inflamed.

Though the lady was pregnant, I did not hesitate to remove such roots of teeth as I thought most hurtful, and carry my probe into the sinus. Much purulent matter escaped from the cavity, and a part of my injections passed into the nostril, carrying purulent matter with them. I simply applied to the

tumor a plaster of diachylon and diabotanum, equal parts, in the hope that, in consequence of the free vent given to the sinus, it would soon be dissipated; but it increased, and fluctuation was perceptible in it. Some surgeon took advantage of my absence, and lanced it several days before I had intended. Considerable pus escaped, but on the next day fungous granulations were developed externally, and also within the sinus, at a point corresponding to the abscess. These last I treated with mercurial water and injections; the external with basilicon and red precipitate. The wound closed, with the exception of a small fistulous orifice, which continued to discharge matter; this, however, I soon healed, by piercing through the fistula into the sinus; it was cured in a few days, and the patient soon recovered her health.

CASE II. *External Fistula below the Malar Bone, communicating with the Sinus.*—In 1771, a laborer was advised by M. Moreau, chief surgeon of the Hotel-Dieu, to consult me upon the state of his mouth. For more than a year he had had a fistula, about the size of a large quill, just below the right malar bone, opening into the sinus, and through which, by closing the lips, he could force the contents of that cavity. This fistula was the result of several inflammatory attacks, which had terminated in an abscess between the cheek and gum. The necessity of toiling for his living did not permit him to attend much to his sufferings; the only relief he sought was in the forced expirations just mentioned, which nature seemed to dictate to him; and with this he might have rested satisfied for life, but for keen and shooting pains which he began to experience in the eye, nose and ear of that side.

The crowns of the two first molares were destroyed, but as their fangs gave no pain, the patient could not believe that these stumps were the source of all his suffering; and it was only after representing the impossibility of cure—nay, the danger to life—while they remained, that I gained his consent to their removal. The alveolar floor of the sinus was very firm and solid; this, after some persuasion, I was permitted to pierce with a three-sided trocar, thereby giving vent to a considerable

discharge of pus. I now, for about a fortnight, used my customary injections through this opening, and also through the external fistula; treating this latter, meanwhile, with simple healing applications. The patient called from week to week, and in about two months and a half was perfectly restored.

CASE III. *Two Fistulas from Purulent Collection within the Sinus.*—In the same year, a woman of Picardy applied to me, who for more than ten years had suffered, at different times, with alveolar inflammations, resulting in abscess. So long as the opening of these abscesses remained free she had little uneasiness; but after a time she found it obstructed by a kind of kernel, which increased until, by the advice of her surgeon, she determined to have the two molares extracted. But, either from awkwardness of the operator, or caries of the teeth, the crowns were broken off and the roots left in the jaw. Various means were used to dissipate the tumor, but spite of 'all, two fistulas formed, one below the cheek bone, the other near the nose; both communicating with the sinus. Setons, injections, &c., were used to little purpose, for the space of eighteen months; at length she came to Paris and applied to me.

The bone was not swollen; the vault of the mouth not involved; the eye lachrymose, and the nose a little distorted. By an effort, the patient could force pus from the sinus through the fistulas. The gums were swollen and extended over the roots of the two first molares above mentioned. The patient's character was irreproachable, which some had been unwilling to believe. The true cause of the disease was very evident, and I therefore scarified the gum and extracted the offending fangs. The root of the second molar penetrated the cavity, and on its removal a small quantity of thin pus escaped. I now enlarged the opening in the direction of the external wall of the sinus, and, on exploring that cavity, found its membrane swollen and soft, and the outer wall denuded. The two fistulas I found to be separated only by a fleshy septum, which I destroyed, and then used injections of honied barley-water mixed with vulnerary water, and a seton charged with tincture of myrrh and balsam of Fivrauenti. The two fistulas, now made

one, healed rapidly, except a small opening, about the size of a pigeon's quill. I next directed my care to the sinus, and after restoring this to good condition, touched the external opening three times with mercurial water; and by the use of injections of the same, diluted as above directed, I completed the cure of this serious case in about three months.

I have treated other cases of the same kind, and have always been successful by establishing a counter opening. I am not the only one, nor in point of time the first, to see the utility of this plan. MM. Rufel and Bertrand merit the honor of this discovery. Their observations are an additional evidence of the excellence of the method. It is pleasant to find one's plans confirmed; at the same time, no honest man will seek to claim to himself the discoveries of another.

CHAPTER TWELFTH.

DISEASES OF THE SINUS FROM BLOWS, BRUISES, ETC.

DENTAL caries and morbid humors are not the only causes of antral disease. The walls of this cavity, though shielded by the malar bone and covered by the tegumentary, adipose and muscular tissues of the cheek, are yet liable to more or less serious injury from external violence, which may bruise, fracture or perforate them. These accidents are rare ; but that they may sometimes happen, the following cases will show.

CASE I.*—In 1607, a young man received, in a quarrel with a travelling companion, a wound in the left cheek, near the nose. The weapon, a sheathed sword, struck with such force as to break at the handle, and required the full strength of both hands of his adversary to remove it. The point of the scabbard was left in the wound, imbedded somewhere in the posterior wall of the antrum. The external wound was healed without any attempt to remove it, and there it remained for nearly four years, causing the patient much, and at times almost insupportable, suffering ; which was rather aggravated than relieved by different surgeons to whom the unfortunate man at different times applied. Some were unaware of the presence of the offending body, and, of course, their treatment was unavailing ; others failed in their search for it, till, at last, rather by good luck than skill, it was withdrawn, in 1611, by two surgeons of Freidburg, covered with a most intolerably offensive matter. Six weeks after its removal the wound was perfectly healed, giving the patient no further annoyance, except a difficulty of carrying the index finger to the mouth, which Jourdain supposes may reasonably be conjectured to have

* Copied from HILDAN, with unnecessary detail ; I therefore condense it.—*Tr.*

some connection with an injury done to the maxillary branch of the trifacial nerve; some twigs of which communicate with the brachial plexus, from which proceed the nerves of the hand.

CASE II.—*Blow on the Cheek from a Stone.*—In 1774, I met an old man, who told me that when about 19 years of age, he was struck on the left cheek, while at play with his companions, by a stone, which was so sharp as to penetrate into the maxillary sinus. The wound was soon healed, and for many years gave no annoyance: but, at length the jaw became hot and painful, and so swollen as to close the nostril of that side. On examination, it was first pronounced polypus, then exostosis. There was an escape of pus: the teeth of that side were all loosened, and the two molares so much so, that he removed them with his finger. The pus at length found vent at the side of the alveolar process, and then the symptoms abated. There was some exfoliation of the maxillary bone. For three months he made frequent use of a gargle of dilute white wine; until, one day, noticing that the gargle did not pass with usual freedom through the alveolar opening, he introduced his finger and felt some hard body obstructing the passage. Without saying a word to his parents, he took a knife and a pair of scissors, and, using them as a substitute for forceps, he succeeded in removing a fragment of stone, of the nature of flint, about the size of the last phalanx of an adult's thumb. In two months from this time the alveolar wound was perfectly healed. He is now over 60, and assures me that his face has never given him any uneasiness. Thus we see how nature sometimes effects what art strives in vain to accomplish.

CASE III.*—*Penetration of the Sinus by a Foil.*—In 1773, a person, while fencing, received a blow from a foil in the right cheek just below the malar bone, of such violence as completely to lacerate the soft parts, and, striking the fangs of the second molar, dislocate it outwards from its socket. The alveolus and a portion of the wall of the sinus were fractured. I did not attempt to replace the tooth, because I saw little

* The third case, in order, in the original, is so unimportant, that I have thought proper to omit it.—*Tr.*

chance of its reunion, but removed it at once : then, after washing the mouth, I took measures to arrest the hemorrhage, and made external applications to relieve the ecchymosis of the cheek. The styptic pledgets of lint came away in five days ; the wound of the sinus suppurated for about three weeks, with slight exfoliation of the bone. These symptoms gradually declined, and at the end of six weeks, as all the parts were approaching a healthy union, the patient used a simple gargle of dilute vulnerary water and honey of roses. In three weeks he was cured.

Such injuries occurring in the young and healthy, and not complicated with any hidden constitutional vice, are not dangerous, and yield kindly to treatment. To these cases of simple local mischief we shall add a few where the local injury may be supposed to develop some internal diseased tendency heretofore concealed.*

* The three next cases given by the author are omitted : the first, because it contains little that is of practical value, and that little so enveloped in a minute detail of uninteresting local and personal circumstances : the second, because, as a case of malignant fungus, this is not the proper place for its insertion, even though it may have originated in a blow ; the third, because, as we conceive, the death of the child had no connection whatever with the local effect of the fall upon the maxillary bone ; but, as the symptoms clearly show, resulted from extravasation within the cavity of the skull. There was, most probably, in this case, fracture of the base of the cranium by what surgeons call the "counter-stroke." The explanation of the symptoms, as given by Jourdain, on the ground of the connection of the maxillary nerves with the brain through the trifacial, and with the viscera through the pneumogastric, is insufficient and unnecessary.

From the first of these three cases, we may learn briefly, this : that, in a child born of an unhealthy and suffering mother and injudiciously reared by incompetent nurses, a blow on the cheek may result in a scirrhus tumor of the antrum ; the removal of which, in the case of a child, especially of a passionate and excitable temperament, is extremely hazardous and by no means advisable. The second case is simply a concise description of a malignant fungous of the antrum, caused by a blow from a stone ; and upon which the author and consulting surgeons wisely refused to operate.—*Tr.*

CHAPTER THIRTEENTH.

EPULIS OF THE UPPER JAW.

EPULIS [Th. *ἐπι*, upon; *ουλα*, the gums] is the name given to a sarcomatous tumor of the gums. It arises usually from some mal-condition of the gums, as abscess, resulting from dental caries; or, directly, from caries itself. In the latter case, the removal of the offending tooth or teeth will often, without any other means, suffice for cure; unless from long standing, neglect, bad treatment, or constitutional complication it may assume a more obstinate character. [It may enlarge like any other morbid growth, and annoy simply from its size and position,] or it may, sometimes assume a malignant or carcinomatous character, involve the surrounding tissues, and prove, ultimately, fatal.

[The author has, we think, been unfortunate in the selection of the three cases illustrative of this disease. Case 1, is quoted from an ancient author (Meckten,) because he happens to have called it "epulis;" whereas, it is a bleeding fungous tumor—whether malignant or non-malignant, does not appear, for there is no history of the case after the operation of extirpation. In Case 2, also quoted from an old author, after the simple mention of the existence and successful removal of an epulis, the subsequent history of the patient is followed through a painful, lingering and fatal disease of the entire osseous system, which, though curious and interesting, is quite irrelevant to the subject of this chapter. The last case we shall give entire, though some may question the applicability of the term epulis.]

CASE III.—*Enormous Epulis, following Fracture of the Jaw, caused by Careless Extraction of a Tooth:* (from the Miscellanies of Joan. Acoluthos,) occurring in the left superior maxilla-

ry of a Polish woman, aged 33, in the year 1693. From the socket of the badly extracted tooth sprang a small tumor, which, in the space of two years, became as large as the double fist; occupying nearly the whole of the mouth, and projecting much on one side. The lips could not be closed, nor the teeth brought into contact. Within a few weeks the growth of the tumor had been such as to threaten the death of the patient by suffocation or starvation, and called for prompt relief.

I sought, carefully, the best method of removing this tumor, which was very firm and adherent to the palate and left maxillary. The teeth were all so closely set, as to forbid the passage of a knife between them. I, therefore, made a transverse incision, commencing at the angle of the mouth, and with the curved bistoury attempted the removal of the tumor. Its cartilaginous and almost horny consistence stubbornly resisted the strength of the surgeon and the keenness of the knife, and I found it necessary to success to remove three or four teeth, which were firmly united to a portion of the jaw, which was necessarily brought away in their extraction. The inner part of the tumor, attached to the palate, required in its removal more caution, for its situation would not allow its entire removal at one stroke; I therefore cut it away piecemeal. For the arrest of hemorrhage, and the suppression of fungous granulations I used the actual cautery. Every part of the wound soon assumed a healthy appearance, except the spot from which the disease had originated: and here a fungous growth was continually being developed. At length, after careful examination, I detected some spiculæ of necrosed bone: and after the removal of these the cure was prompt and complete.

CHAPTER FOURTEENTH.

POLYPUS OF THE MAXILLARY SINUS.

POLYPUS [*πολλοι*, many, *ποδες*, feet ; erroneously so named from the idea that it had several roots or feet] though regarded as an excrescence peculiar to the nasal cavities, is sometimes found in the maxillary sinus. [The nose is far the most frequent seat of polypus ; next to it the uterus ; then, in order of frequency, the maxillary sinus, the rectum and the vagina. All the mucous membranes are liable to their occasional though rare occurrence, except, perhaps, the gall-bladder, ureters, and fallopian tubes.] It is commonly defined as a fleshy tumor, named from its resemblance to a marine polypus ; its nature and causes are a subject of dispute.

Polypi are recognized as of two kinds : the one, loose, pale, indolent and benign—also called vesicular polypus : the other hard, unyielding, livid and painful, marked with veins, and often hideous. These last kind are difficult of management and approach the nature of cancer. Especially if injudiciously attacked with caustics. Between these two there is a third class, fleshy, elongated and easily stretched ; they may be readily removed by extirpation, evulsion or other means. [Dr. Warren classifies polypi into membranous, fibrous and vascular ; the latter is rare, and in his experience has never become malignant. The membranous polypus, called by others, vesicular or gelatinoid, and including also a rarer form, the granular, corresponds with the first class of our author ; it is quite common, not very difficult of removal, but very liable to reproduction. The fibrous variety occurs singly, and usually is attached by a narrow neck, requiring, often, for its removal by forceps, the utmost force that may with safety be applied. Of all means for the removal of polypi, the knife, ligature, cautery

or forceps ; the latter are, in almost every instance, much to be preferred, and are, at present, almost exclusively used. The best form of polypus forceps, is, perhaps, that recommended by Dr. Warren, with straight blades and twisted handles ; they occupy less space, and are, consequently, more easily introduced and managed.]

Gallien classes polypi among morbid hypertrophies, not wholly extraneous, as calculus or entozoa, but resembling, for instance, pterygium. The vessels which nourish a polypus, are formed by an enlargement and extension of those of the natural parts whence they originate : hence the difficulty often met with in their radical cure. Accordingly, as there is a more or less vitiated state of the fluids, will the polypus be, on the one hand, firm and fleshy ; on the other, bloody and painful, soft, fungous and livid. This is an important distinction : and the surgeon should, by every available means of sight, touch or use of the probe, and by the consideration of every general or local symptom, strive to ascertain it, so as not, by injudicious operation, to endanger his patient.

Polypi are uniform, or lobular, the latter having a greater tendency to malignant action. [Mr. Pott asserts that a polypus is, from the first, either benign or malignant : Mr. John Bell, however, denies that it is ever mild, or ever malignant : at all times to be feared, the horrible symptoms frequently ensuing are a direct consequence of the pressure of so large a tumor ; nor should it for that reason be charged with malignancy any more than an aneurism, causing pressure in the same position. Certainly, if shocking symptoms, and inability to give relief, constitute malignant action, some forms of polypus will deserve that epithet.] They may be attached to the side of the nostril or to its septum ; to its inferior or superior portion. They often close up the posterior nares, encroach upon and derange the palate, distort the vomer or nasal wall of the sinus, penetrate that cavity : and, in fine, cause by their increase much local disturbance.

The antral mucous membrane is also, sometimes, the seat of polypus. Originating in that cavity, they may extend through

the nasal opening; and, by growing also within the antrum, thus form two lobes. In the majority of cases, however, polypi of the sinus have their pedicle in the nasal frontal or ethmoidal sinuses. According to BERTRANDI, the excision of these tumors of the antrum is useless: this we may attribute to the difficulty of complete extirpation. Again if the roots of the tumor extend beyond the cavity into the frontal or ethmoidal cells, our efforts will usually be unavailing, even though we should employ, in connection with the knife, the actual cautery, as some recommend. Of this extension we are often informed by certain commemorative symptoms, head-ache, drowsiness, epistaxis and oppression in the frontal cells: operation in all such cases may only tend to torment and shorten the life of the patient.

Bertrandi is not the only authority for the existence of polypus in the sinus. Ruysch, Wepser, MM. Petit and Levrette, all assert that they have seen them. [Chelius and Weinhold also report cases of genuine antral polypus. Sir B. Brodie and others, however, deny that true polypus ever arises from the membrane of that cavity. Fibrous tumors and fungous growths within the antrum are, undoubtedly, often erroneously described under the general term polypus.] To the observations of these men I shall add some cases in confirmation.

CASE I, (from T. Bartolin.)—M. Jean Schmid had the left nostril filled by a polypus: the left cheek was swollen, [scirrhus, immovable, and the seat of those peculiar lancinating pains indicative of cancer. A branch of the tumor hung in the left nostril, much as a polypus, greatly distorting the nose: the left eye also protruded from its socket, and, altogether, the aspect of the patient was horrible. I deliberated with three experienced physicians, in consultation, upon the propriety of the hot iron or of extirpation with the knife; our conclusion was that an operation would only bring unnecessary pain to the patient, and reproach upon the profession, developing, most probably, a latent malignant tendency. The patient, however, urged by his sufferings submitted to an operation, by a rash empiric; gangrene supervened and he died on the third day.

[This case would seem to be a fungus of the antrum, sending through the nasal opening an excrescence resembling a polypus only in form and position, not in its nature.]

CASE II.—(Reported by M. Clement in the Journ. of Medicine.)—In 1769, in the *Hotel Dieu of Orleans*, I held a post mortem on the body of a man aged 66. About two years after a blow on the side of the nose, which had received no treatment, he began to be affected with a polypus which completely filled the right nostril, showing itself at the anterior nares, about the size of a turkey's egg. The eyes became prominent, especially the right, which stood almost out of its socket, and the space between them was increased by half; two fistulæ lachrymales discharged constantly tears mingled with pus. The nasal bones and nasal process of the maxillary bone yielded before the immense tumor. The sight was almost gone, and the deformity was very great.

I made an incision the whole length of the right nostril, and laying up the flaps, exposed the tumor. The nasal and maxillary bones, as far as the malar bone, were destroyed. The maxillary of the opposite side was in its natural condition, but there was slight disease of that sinus. The tumor was rose colored, and covered with a distinct, very smooth, non-vascular, membrane. Its surface was irregular, resembling a potato: its shape pyramidal, three inches long, five and a half in circumference, with its base towards the anterior nares, its point looking backward to the posterior nares, which it completely obstructed: solid and elastic in its structure except on the side against the vomer, where it was ulcerated: when cut open it exhibited a pale yellowish color, without any trace whatever of vessels.

I found on raising the tumor that the palate bones were attached to it and softened, and the right sinus filled by a process from it. On removing this tumor from the sinus, I found its membrane destroyed, except at the bottom of the cavity, where it was of the same color with the tumor, soft and thickened. The turbinated bones were also much softened, and the substance of the maxillary bone was much altered, especially the

orbital process. On removing the protruding eye I found in the orbit a second polypus tumor; the walls of the orbit were much injured, and towards the inner angle entirely destroyed. In the left orbit I found also a small tumor; and the unguar bone, and part of the palate bone, destroyed.

On examination of the cavity of the cranium I found the vessels of the dura mater and of the brain much congested; the lateral sinuses filled with purulent matter, and their *septum medium* destroyed. This mischief was traced to an abscess, on the site of the cribriform plate of the ethmoid bone, and gave ample explanation of the symptoms which preceded, for about a month, the death of the unfortunate man—heaviness, pain in the head, drowsiness, trembling of the lips, numbness of the limbs, with many other apoplectic symptoms.

On further dissection, I found that the tumors of the sinus and of the orbits were branches of the nasal tumor which was attached by a single pedicle to the posterior part of the nostril. To prove this conclusively, I detached this pedicle, and then removed the entire tumor in one mass.

CASE III.—In 1772, I had occasion to visit a shoemaker, living in the Fauburg St. Marcel, who had, for some years, had a kind of exostosis of the right superior maxillary. The tumor was as large as a medium sized apple, displaced the nose, deranged the palate, and threw the eye upward against the superciliary ridge, permitting the lids to open but slightly. The sinus had three fistulous openings; one below the malar process, a second near the bicuspid, and a third near the inner canthus of the eye; in none was there any discoloration of the skin, and, alternately, from the two first there was discharged, an acrid reddish humor. Most of the teeth of the affected side were lost: those which remained were sound, but much displaced by the tumor. The right nostril was obstructed by a polypus of a scirrhus hardness. In sounding the sinus through the fistulous openings, the instrument came in contact with fleshy masses in that cavity, some hard, some soft, giving out, when wounded, a bloody discharge, resembling wine-lees. The nasal wall of the sinus was destroyed, but the maxillary bone was not softened.

This disease seems to have had its origin in repeated attacks of alveolar abscess, the consequence of bad teeth, which usually terminated in fistula. Gradually the bone commenced to swell, and the nostril to be obstructed—the patient, meanwhile, resolutely declaring he would sooner die than suffer a surgeon to touch him—till his appearance was such as I have described. Had I been suffered to operate, I should have removed all the teeth, good and bad, involved in the tumor; and then, making a crucial incision through the cheek, would have exposed the bone, which, from its extreme thinness in this case, I might hope readily to remove. I should then have removed the exposed tumors from the antrum by knife, cautery, or both combined, as occasion might suggest; looking carefully to the condition of the bone, and seeking, after my operation, to establish a healthy suppuration in the part.

CASE IV.—*Polypus in the Right Sinus.*—In 1773, a lady applied to me whose right cheek had been swollen, and singularly hard for nearly two years. The tumor was the result of successive inflammatory attacks of the first bicuspid, and three molars of that side, the fangs of which alone remained, and were covered by a polypus tumor, that had distended and softened the outer plate of the maxillary bone.

I first made an incision down to the alveolar sockets, and, after the arrest of the hemorrhage, removed the roots, twelve in number, each having, at their extremity a morbid growth, showing that here was the chief cause of the disease. Their removal occasioned considerable hemorrhage. I examined the wound on the next day, and found that the bulk of the tumor lay between the plates of the maxillary bone, diminishing towards, and terminating at, the orbit. Between the cheek and gums were two fistulous openings, which discharged a dark fetid humor. The diseased state of the bones decided me to remove the tumor by two vertical incisions through them; this space permitted me to introduce my finger into the sinus. Its membrane was swollen, and there was still a portion of the tumor attached to the orbital plate: this, from its near approach to the eye, I feared to cauterize with the hot iron, and, there-

fore used spirit of vitriol with a small quantity of corrosive sublimate dissolved in it ; being careful to employ *dry* dressings, that the escharotic might not, by spreading, cause injury to the surrounding parts. After eighteen days use of the same, a healthy appearance of the membrane was induced, suppuration established, and at the close of the fourth month, after some slight exfoliation of bone, the patient was restored.

CHAPTER FIFTEENTH.

FUNGUS OF THE MAXILLARY SINUS

THIS might, without much impropriety, be classed with polypus; but since the latter is attached by a pedicle, and the former by a broad base, I shall, in better keeping with my arrangement, treat them separately. Not only the head, but all parts of the body are subject to fungous formations. We apply the term fungus to that form of tumor, called by Bruno Theodoric, “natta;” by Bertapalia, “nacta.” These writers are, I think, inclined to class it among tumors containing purulent matter, but the treatment suitable to these is not adapted to fungus. The disease has been noticed by nearly all writers. Gallien says it is a “soft, loose and spongy tumor, resembling a mushroom; and, like it, springs up sometimes in a night.” Fabricius Hildan describes it as a “fleshy body, usually soft, and flabby, with very little pain, and of rapid growth. Quite often, instead of being soft, it is hard, irregular, painful, and more or less malignant—occurring mostly in the extremities.”

Beside these tumors of rapid, malignant growth, there are other forms of fungus which declare themselves more slowly, preceded often by some other disease. They may result from contusions or fractures of the bone, from epulis, parulis, or from dental caries. Though the causes be simple, the disease is often most grave; yet, if there be no constitutional vitiation, and no improper irritating remedies have been previously applied, their growth may often be arrested. Not so, however, with those forms of fungus which seem to come without previously exciting causes, and are of rapid mushroom growth. They spring from some vitiated state of the fluids, and are usually a stumbling block to the curative art, especially if they assume an indurated, unequal and painful character.

The attachment or position of fungus in the sinus depends much on the cause originating it. In simple cases they are mostly attached by a broad base to the sides of the cavity; and, if several are present, do not fill it; while malignant fungus almost always occupies the entire sinus. In the simpler forms, their situation is generally such as not to interfere with the introduction of the sound, nor do they, as in the malignant forms, spread into the frontal and ethmoidal cells. No previous disease of teeth or gums is necessary to the origin of malignant fungus. Its accession is ordinarily indicated by a sudden attack—perhaps in damp weather—which, spite of all precaution and treatment, continues to increase, occasioning a sense of weight and lancinating pain above and between the eyebrows; a clear, reddish discharge escapes from the nose; at length the bone swells, and the interdental spaces are filled by fungous masses, the gums are often covered with tubercles, and the teeth elongate, so as to require extraction—which operation, in many cases, gives occasion to the fungus to shoot out exuberantly, filling, not seldom, the whole of that side of the mouth. Fungus of the latter kind is less uniform in surface than of the former, resembling often the head of a cauliflower; the tuberosities being formed by the rapid growth and assemblage of many varicose vessels. [Some attribute to fungus, in explanation of its frequently rapid growth, a high state of vital action enabling it to generate a system of circulating vessels within itself, in which the veins greatly predominate, and which are of such frail texture as to bleed on the slightest touch.

It would seem that beyond a certain time the tumor loses to some extent its painfulness and sensibility: perhaps because the nervous filaments become so stretched or compressed as to lose their function. Usually we find, that in proportion to the rapidity of the disease, dependent on the virulence of the morbid action, will the constitution be more or less involved, and the cure difficult or impossible. When involving the bone, its action is not local, as caries, but affects the osseous structure; either completely, as in the malignant forms, or, partially, as in the more benign; yielding often in these latter cases,

where not neglected or maltreated, to skilful measures, and leaving, by the process of exfoliation, a healthy surface of bone beneath. It is important in forming our prognosis, as well as in deciding upon the expediency of operating, that we distinguish between the benign and inalignant forms of fungus. [The sole remedy in either event is extirpation, and this in the great majority of cases of true fungous, fungoid, cerebriform or encephaloid disease will prove unsuccessful: either from the impossibility of radical removal or the liability of recurrence in other parts of the body.]

Surgery proposes various measures for the cure of fungus—the knife, cautery, ligature, escharotics. If the disease is traceable to simple mal-treated epulis, parulis, or dental caries, it will first be necessary to remove the offending teeth or fangs. If then the socket be found filled with a soft bleeding mass, and yet the bone not so far distended as to admit the use of a cutting instrument, recourse must be had to actual cautery. But if the morbid mass be only partially adherent to the bone, the place and extent of that attachment being ascertained, it may be removed by a pair of delicate bladed scissors. The lining membrane of the sinus must then be carefully examined, to see that it is not involved in the disease. Sometimes simple escharotic applications will suffice for the cure of these milder forms of fungus.

In the more serious forms of the disease, the knife and actual cautery are the surgeon's resort. The first is more prompt and less painful, but apt to be followed by more serious hemorrhage; the second obviates the latter objection, but may, from the great irritation, excite a malignant action, where previously there was none: its tediousness and pain is another objection. [The knife in soft parts, and bone nippers and saws of suitable shapes, where the osseous structure is involved, are, in all cases of extensive disease preferable. In some cases, as, for instance, the deep seated parts of the face, the cautery may be required for points which the knife cannot reach: and in slight tumors caustic potassa might possibly be employed to best advantage.] In the pedunculated forms of fungus, the

ligature is preferable to any other means. Some authors recommend the removal of that part of the maxillary bone to which the tumor is attached, I think that it should be previously ascertained if the part to be removed is involved in the disease; and, in settling this point, pain is not a sufficient guide, for in almost all simple forms the bone will be found very painful.

[The term fungus, as used by our author, has a somewhat more extended application than its more modern synonymes—fungoid, spongioid, encephaloid disease; medullary fungus, fungus hematodes, cerebriform tumor, soft cancer, etc. For minute information on this fearful disease, first accurately described by Mr. John Burns of Glasgow, reference must be had to the writings of Hey, Abernethy, Laennec, Roux, Maunoir, Ward-ross and Carswell, who have given to it a very special attention. Unlike carcinoma, it is most apt to occur in youth, but too often resembles that disease in the obstinacy with which it resists art.*]

CASE I.—In 1773, a lady applied to me for a fleshy tumor in the sockets of the two right upper molares, the crowns of which had decayed away, and the fangs been lost by extraction and otherwise. As she suffered not much pain, she was not uneasy until she noticed that the tumor bled whenever she masticated on that side. Gargles had been advised, but to no purpose. The fungus was attached only to the external wall of the sinus, and, on sounding its direction and extent, my instrument passed through the alveolar plate of bone. I applied a ligature as high up as possible, and on the fifth day the tumor came away leaving a slight prominence at its point of attachment. After fifteen days use of gargles I dismissed the case.

CASE II.—In the same year an individual consulted me for a fungus of the left alveolar border corresponding to the second bicuspid and first molar. The bone was much distended, and

* For the different classifications, varieties, and theories of fungoid disease, we are compelled to refer to the above authors, as their satisfactory consideration here would occupy much more space than is consistent with the plan of this work.—Tr.

softened, and in the centre of the tumor was a fistula through which I detected several hard bodies which I conjectured to be roots of teeth. The patient had a good constitution, excellent health, and was in his prime. I cut down, by a circular incision, to the roots, imbedded in the tumor, and without much difficulty removed four. On the third day my appliance for the arrest of the hemorrhage came away, and I found that the wound showed a disposition to renewed bleeding and fungous growth. With the advice of M. Petit, I concluded to apply the actual cautery, and found it to answer my expectation, conjoined, as it was, with detergent injections. Portions of the bone exfoliated, and in three or four months, the wound was in the best possible condition. I closed the cure by the use of a healing excitant gargle.

CASE III.—(from Garengéot.)—A young woman, continually exposed from the nature of her occupation to injuries, suddenly experienced a very cold sensation in the left cheek, followed by swelling. The superior molares of that side became painful, loosened, and at intervals fell out; keen and lancinating pains supervened, the jaw was monstrously swollen, the face much deformed, and the cheek, nose and upper lip distended; the mouth was thrown to the right side, and a bluish colored mushroom growth about the size of an olive projected from it. M. Garengéot being consulted, remarked that this olive shaped fungus originated from the alveoli of the lost teeth; that the left vault of the palate was swollen, the superior and anterior part of the maxillary bone carnified; that the sinus was filled with carcinomatous excrescences, and that the left nasal bone had also commenced to become tumid and carnified. The excrescences of the sinus were removed as completely as was possible by M. Garengéot; and, from the patient's repugnance to cautery, escharotics were used, but to no purpose. At length the patient consented to the use of the hot iron, which was applied at various times for a month. This, with detergent gargles reduced the swelling, restored the palate nearly to its former condition, and effected a complete cure.

I pass now from these simpler forms to the more malignant

kinds of fungus. We shall see how the sagacity of men of merit, and the resources of art, may prove unavailing. Though I may be reproached for this detail of incurable cases, as calculated to create alarm, I cannot but believe they will be fraught with much instruction. We cannot hope for success until we fully understand the causes and circumstances of failure. Furthermore, we shall see how, sometimes, the love of life has suggested measures which the most intelligent and skilful surgeon has scarce dared to imagine; and how consistent such measures are with safety.

CASE IV. *Malignant Fungus of the Right Superior Maxilla.*—In February, 1768, a gentleman wrote to me a detail of his case which presented the following symptoms. Four years before, a small tumor formed over the root of the right upper canine, which, on being lanced, discharged a fetid pus, but still continued to present a hard prominence. Seven months later, the right nostril become obstructed, the eye lachrymose, and the gum between the canine and last molar—for a long time the only remaining tooth on that side—swollen. The root of the canine was extracted; its socket seemed in a sound condition. Soon the last molar elongated, became loose, and was easily removed; its crown was sound but one of its fangs were partially destroyed by caries. Pressure on the gum caused a crepitation like the crushing of dried egg-shells.

The patient was advised to try an injection of St. John's wort and honey, which excited severe pain, and brought on after the fifth or sixth application a violent fever, which lasted for nearly a month. During this time a mushroom excrescence projected about half an inch from the socket of the last molar, which was without difficulty removed by a skilful surgeon of Besançon; and with it, so much of the alveolus as admitted the introduction of the finger into the sinus. This was followed by daily emollient injections, regularly after which a violent accession of fever supervened, until at length the injections were suspended that the fever might be cured. It lasted twelve days, during which time the excrescence returned.

The patient went, at this stage of the disease, for greater

convenience of advice, to the Besançon hospital; there the fungus was a second time removed, and applications made of red lead, mercurial solutions and astringent lotions during the six weeks of his stay there. Spite of all, the fungus returned, grew to the size of a pullet's egg, extending along the alveolus as far as the second incisor. In Feb. 1766, he returned to the hospital, when the surgeons, fearful of the hemorrhage which might follow the knife, attempted its extirpation with the cauterium.* But the irritation was too great; they, therefore removed as much as possible with the bistoury, restraining the hemorrhage with astringents and compression. This was repeated five times, but the fungus still grew. Gouge shaped cauteries were also tried, and the mercurial solution. At last the fungus appeared to be destroyed, and he returned home in June after four months suffering, having, meanwhile, had an attack of erysipelas in the face. For six months he used pledgets of lint to the wound, saturated with alum, mercurial solution, or "*pierre infernale*;" still the fungus grew till it impeded mastication; its palatine surface flat, slightly elevated and moderately sensitive; while, externally, it projected from the alveolus about an inch, bled easily, and continued to increase. Also during the last six weeks the tumor began to develop in the right nostril, being, at the present time about the size of a filbert.

In October, violent head-ache supervened, commencing at the root of the nose, and thence extending to the right brow and temple. The pain was lancinating, and came on, periodically, about eight o'clock, and lasted till four. This continued for a month. Bleedings in arm and foot, and pediluvia, night and morning, were the remedies used. Towards the close of December an attack of the right eye came on, swelling the lower lid to the size of a small egg, and causing a second tumor at the inner canthus. They were both poulticed and then lanced; the first tumor discharged an albuminous fluid, the second pus.

* The alveolar ridge being destroyed, there was a depression in the fungous excrescence about an inch and a half in size. Into this, a hot iron about the size of the finger was introduced, three times a day, for 70 days(!) but to no purpose.

It was necessary frequently to open these tumors, and the discharge from the latter was always abundant, varying in appearance, being pale, greenish, or, more rarely, of the color of wine lees. For some days pus has been discharged in the acts of sneezing or spitting. The eye, I neglected to remark, has been for eighteen months, turned inwards, and a little prominent.

I stated, in reply to this letter, that the treatment of the distinguished surgeon named had been unexceptionable; that the disease was evidently a carcinomatous affection, involving the general system, and that my hopes in his case were, it must be confessed, feeble. I urged the necessity of his coming to Paris; and meanwhile advised simple antiseptic and detergent lotions. He came on the last of March, and I examined the tumor, which presented the appearance above mentioned. The fungus was very irregular, had extended over the palatine arch, and was covered with varicose veins, which bled easily.

Reluctant to operate in so grave a case on my own responsibility, I consulted with the most distinguished physicians and surgeons of Paris. Drs. Petit and Missa, and MM. Morand, Moreau and Guyenot, surgeons, were averse to operation, in the belief that the disease was deep-seated; that, therefore, constitutional measures were advisable before severe local ones were adopted, and that, at best, the treatment could be only palliative, not radical. M. Louis and others deemed extirpation practicable. Since, therefore, opinion was, in point of number, equally divided, I was constrained to yield to the patient's desire for the operation. This I performed on the 4th of May; meanwhile we established an issue on the left arm, and endeavored to prepare the system by suitable medicines.

The operation was commenced by an incision, with a double edged scalpel, around the whole course of the alveolus and outer wall of the sinus. Then, passing a narrow waxed ribbon through the lower part of the tumor, whereby an assistant might draw it gradually outward, I separated it from the nasal and orbital walls of the maxillary sinus, cutting down so closely to the firm bone as to turn the edge of my instrument, thus removing the entire tumor. The hemorrhage, though profuse,

was momentary, and was easily arrested by lint saturated with styptics. The tumor, when washed, weighed an ounce and a half, was shaped somewhat like a pear, terminating on its broad extremity with cauliflower excrescences, and was partly of a fleshy, partly of a scirrhus, hardness.

The operation was not followed by fever, and the patient seemed to be doing well. He would not consent to my desire to apply the actual cautery to the nasal wall of the sinus, which seemed altered, and to the nasal polypus above mentioned, which could not be attacked in any other way. From this wall arose a tubercle, which, spite of every variety of escharotic application, encroached upon the cavity of the wound, which previously had begun to assume a healthy granulating appearance. I again used the knife, and extirpated this fungous growth, and applied to the nasal polypus oil of antimony, [antimonii hydrochloras,] &c. But our most valued means proved useless; the tumor reappeared, enlarged and became soft and spongy. I regarded it as a return of the original disease; and, as the patient was depressed and chagrined at the failure of the two previous operations, I advised him to return home, which he did after having been under our treatment five months.

I have understood that the patient has since been operated upon, but without benefit. A young surgeon of skill, named Bastide, destroyed the fungous growth, by three months' use of spirit of vitriol, but the diseased action still progressed, destroying a part of the palate, and occasioning several severe hemorrhages, which greatly reduced him, and which, it is presumed, proved ultimately the cause of his death.

This case is, from its very want of success, an instructive and useful lesson. It shows us to what length an apparently simple affection may extend; and guards us against the error of those who, basing their confidence upon those works which report only successful cases, do not scruple to promise cure in all cases, and make their patients the victims of their delusion.

CASE V.—Madame —, aged 60, of an active, sanguine temperament, had always enjoyed excellent health. Her menses had ceased without any accident, and she had led a labo-

rious life, paying no heed to trifling indisposition. She experienced, for about four months, a numbness throughout the whole of one side of the face, which, in spite of some aperient medicines prescribed by her physician, remained, and was followed by an almond-shaped tumor on the upper jaw, on the site of a molar lost many years previously. The physician and dentist, who was consulted, thought this an abscess, and accordingly lanced it; much blood escaped, but without lessening the size of the tumor.

The lady's surgeon, after a careful examination, concluded that there was fungus of the sinus, which had thus protruded through the carious alveolar process, and which, relieved by the incision from any restraint by the gum, grew rapidly. Subsequent dissection showed the entire floor of the sinus carious, and this cavity filled with a fungus, which, unlike polypus, adhered to the entire surface. The mass was removed as completely as possible with the knife, and then the hot iron was applied. But the fungus soon reappeared, the discharge was foul, the constitutional disturbance great, with much depression and a leaden countenance, indicative of cancerous taint. Antiseptics were now administered internally and locally, and camphor and quinine. The cautery was thought unavailing; and in this state the case was submitted to me, June, 1773, by M. Enaux, surgeon.

I pronounced the case hopeless, recommending tonics to strengthen the patient, and a palliative treatment. Not long after she died.

The use of the cautery is, perhaps, in such cases often too long deferred. Instead of following some previous operation, which has already determined to the part an increased afflux of disease, might it not be better, after using proper internal preparatory remedies, to have resource to it at once, with a view to establish a healthy suppuration? We may learn from this and the following case, how fungus of the antrum may make considerable progress without any external evidence of its existence; without even giving rise to symptoms to warn us to adopt a palliative treatment, which, in its early stages, might

possibly prove efficient. This dormant constitutional tendency seems, as it were, to lie in wait for certain times and changes in the system favorable to its local development.

CASE VI. *Obscure Fungus of the Right Sinus.*—In 1758, M. de V. F., of Strasbourg, aged 76, suffered much pain from the right upper first molar, which, though loose and elongated, was sound. Its extraction relieved him, but there followed a swelling of the gum. Two years after, this swelling began to enlarge, and extended as far as the left central incisor, causing the bicuspid, canine and incisors to loosen, and encroaching inward upon the palate; the patient sought my advice. On the site of the first molar was a bluish spot, and the alveolus was as large as when the tooth was extracted. Fluctuation gave evidence of the presence of some fluid in the tumor. As he suffered no pain, his surgeon, M. Pibrac, recommended various gargles, but they were of no service.

A year after, he consulted me again. The tumor had much enlarged, and was not, in my opinion, confined to the gum, but would be found to have some connection with the sinus. On the 12th of November following, he presented himself for operation. The tumor in the palate was the size of a pigeon's egg, without heat or pain; the alveolar border at least an inch wide, and between the canine and bicuspid was an ill-looking fungous excrescence about the size of a large pea. The nasal secretion was slightly purulent, and the eye a little drawn and troubled with occasional pricking sensations; the cheek swollen but not discolored. The tumor, when opened, discharged a thick, bloody and very offensive fluid. The antral membrane was fungous and devoid of sensibility; and from this cavity I drew a piece of detached bone, which proved to be a necrosed fragment of the maxilla—probably of its alveolar process. The injections passed readily into the nose, showing that communication to be free. Nov. 26: I removed the canine and bicuspid, in consequence of their extreme looseness. The fang of the former was very much roughened and diseased, that of the latter sound. On the next day a large fungous ulcer appeared over these teeth sockets. To avoid an operation on so old a

man, I used various escharotics, but to no purpose. I therefore was compelled to use the knife; with it I removed the fungus, exposed the diseased bone, applied to it mercurial water, which produced speedy exfoliation, but the diseased growth returned. In its centre I noticed a prominence, which I seized with forceps; but on attempting to draw it, great pain was excited in the sinus, and the eye was suffused. I concluded that it was a prolongation of the antral membrane, and as the patient would not consent to the cautery, I excised it with a pair of delicate scissors, as high up as possible, and then carefully applied the butter of antimony to the point of its origin, as near as I could ascertain it. I touched the fungous palate with the same, and the parts healed as successfully as could be desired. To the sinus I applied the tinctures of myrrh and aloes, &c. All was going on well, the antral membrane less fungous, the alveolar arch assuming its natural condition—when the vault of the palate, which had continued swollen, became livid, flabby, mottled and painful. Escharotics were used unavailingly; at last I excised the diseased mass, and cauterised the wound with butter of antimony. Nov. 30: the wound assumed a healthy color, and suppuration was established. I then employed detergent gargles and injections. This patient, when I was thinking that he would no longer require our aid, imprudently exposed himself, and was seized with an inflammation of the lungs, which caused his death the following April.

CASE VII.—In 1775, a child, eight years old, of a strumous habit, as indicated by swollen parotid and axillary glands, who for two years had suffered with caries and fungus of the palatine arch, was brought to me. This child had been twice submitted to a course of mercury, on the supposition of syphilitic disease, and the state of the mouth fully attested the violence of the remedy. I first recommended sudorific infusions and two gentle purgatives at an interval of three weeks. I then removed the fungus, and with it portions of the external and nasal walls of the sinus. The hemorrhage was of short duration; but on introducing my finger into the sinus, I found that the disease was not entirely removed. But the child would not suffer the

use of the knife a second time, much less the cautery; I was therefore under the necessity of applying to the diseased spot a pledget of lint saturated with spirit of vitriol and corrosive sublimate, and filling the rest of the cavity with dry lint. There was no return of the fungus; the spongy bones, vomer, ethmoid, and alveolar ridge exfoliated more or less, and the surface of the wound assumed a good condition. Suitable injections and dressings were applied; and with these, constitutional remedies were resorted to, for the removal of the strumous diathesis. At this stage of recovery, the parents of the child, judging that it no longer needed my aid, never again presented themselves, so that I cannot speak with certainty of the result of this case.

CASE VIII.—Some five years since, Mmslle —, of Orleans, suffered from wry neck, followed by fixed pains in the left side of the head, which prevented her from resting at night in a recumbent posture. Three years subsequently she had a continued fever, from which time, being then 46, her menses ceased. Some months after this, her left eye became prominent, and the pain in the head more and more severe, for which blisters and depletions were tried in vain. Two painful teeth were extracted, which operation was followed by an attack that caused the eye to protrude almost from the head, and the lids to swell very much. They were scarified, &c., but on the lower lid there appeared an abscess which resulted in a fistula. This fistula communicated with the sinus, because injections through the sockets of the lost teeth into that cavity passed out at that opening. The eye continued prominent; and the pains keen and almost insupportable. MM. Dejean, of Orleans and of Paris, noticed that for some months past there had been tumors of the alveolus and in the nose; but my examination convinced me that these were not simple tumors, but parts of a true fungus, which greatly distended the outer plate of the maxillary bone, filled the antrum and softened the bone, which was undoubtedly for the most part carious.

The opinions of the surgeons called upon this case did not agree. M. A. Petit and myself thought no hope could be held out to the patient. Three other very distinguished surgeons

considered the case curable; and the case of M. Garengéot, above given, was adduced in favor of their opinion. But the age of the two patients was very different, nor were the cases, in other respects, analogous. I have learned that this patient returned home in January last, without being cured, notwithstanding many applications of the cautery.

CHAPTER SIXTEENTH.

CANCER AND CARCINOMA OF THE SINUS.

THESE diseases have fixed the attention of many distinguished men; but their works contain such lengthened discussions, that mere extracts would exceed the limits of this work. I shall therefore content myself with an exposition of some of the ideas found in the Dissertation of Manget.*

Three things render the cure of cancer impossible—the matter, the quality and the depth of root of these tumors. The matter is, according to Hippocrates, atrabilious, glutinous and capable of propagation, as also of suppuration. Or it is, as says Aretas, stern and indomitable as a rock; nay, more so, for while the one yields to the action of solvents, the other under their influence changes from a state of inaction to that of progressive ulceration. The quality of cancer is highly acrid; more so, according to Hippocrates, than aught else, resisting the action of the most effective remedies, and rendering the cautery not only useless, but often injurious and even fatal. Cutting or burning causes an increased reproduction, in consequence of the number and depth of the fibres, which, says Theophrastus, spread as the roots of some trees, and hold, as with claws, the cancer. Nourished constantly from within, they resist the measures adopted for their destruction, as some plants thrive the more the earth is trampled upon.

With good reason, therefore, has Hippocrates pronounced this disease, when in the state of ulcerated excavation, incurable. Its radical extirpation should not be attempted unless we wish to shorten the life of the patient; but we should the rather

* Biblioth. Chirurg. vol. iv, liber xvi, art. *Cancer*.

resort to mild, soothing and emollient applications; for, as says Meniotius, we should avoid irritating ferocious animals.

Among the many works on cancer and carcinoma, I would specially recommend the Dissertation of M. Vacher, chief surgeon to the Besançon Hospital, as a brief, concise and clear treatise on the nature, symptoms and progress of this disease. Though confined to the mammary gland, the remarks are in many respects applicable to the disease in other localities. [A list of the works on this fruitful subject will be found in the Surgical Dictionary of the late Samuel Cooper; also in *Cheilius' System of Surgery*.]

Two kinds of cancer are usually recognized—occult and apparent. Of the former class mostly are those which occur in the maxillary sinus, and which demand our special attention. Head-ache, fever, pains, at first dull then lancinating, in the frontal, ethmoidal and maxillary sinuses, with twitchings, numbness and loosening of the teeth on the affected side, are the usual precursors of this cruel malady. These symptoms, however, may attend other affections of this part, and cannot, consequently, determine with certainty the exact nature of the disease. Fortunate is it for the surgeon if his diagnosis prove correct; but how often does it happen that he incurs censure by wrong judgment. If he be prudent and careful, he will rather await the issue, advising soothing remedies, local and constitutional; thereby he may calm the patient's spirit, and thus lull the pain. But how can lotions, gargles, and such like, act upon the sinus within, or arrest the progress of so malignant a disease? Equally unavailing, and far more dangerous, as we have shown, are escharotics and cauteries.

I know there are those who pretend to cure these diseases. But though I will believe the assertions of some made in good faith, I must think they have been deceived by false appearances. Others, again, by imposing on public credulity, gain an extent of reputation which conscientious men of worth fail to obtain. They think they perform cures, but what does the issue prove? Sooner or later the disease is renewed under the same or a different form, in that or some other location, and at

last the patient sinks. [The records of empiricism are filled with the cure of simple tumors, first magnified into malignant cancer; and in not a few cases the poisonous remedy has caused the death which the innocent disease would never have occasioned. The annals of surgery give such conflicting accounts of the success of operations, that we might well say, with Richter, "*Jure sane dixeris, de uno eodemque morbo hos viros loqui, dubitari fere potest.*" In truth, the terms scirrhus, cancer, carcinoma, osteosarcoma, &c., have been used with a vagueness of import which stands much in the way of any accurate statistic analysis.]

Verduc asserts of the operation for extirpation, that its very success is supposed to be proof conclusive that the disease cured was not cancer, but simple scirrhus tumor, inasmuch as the best practitioners up to the present time doubt whether there is on record a single cure of true cancer by this means.* He says, also, that experience has shown, that in ten cases out of every twenty the disease is renewed on the site of the first tumor, or in some other part of the body, and death ensues; that post mortem examinations have shown that the poison has simply been displaced, not destroyed. [The best surgeons of our day differ from M. Jourdain, and regard extirpation in many cases expedient, and sometimes successful. In no single case, however, is it safe to promise a radical cure. If the disease be purely local—if it have not progressed so far as to affect the general system, the complete removal of the diseased mass may effect a permanent cure. But if the local mischief be only a particular manifestation of a hidden constitutional taint, as most commonly happens, no operation, however thorough, can secure exemption from its recurrence, and that, too, in perhaps a more malignant form. Before deciding in favor of, or against an operation in any particular case, we should learn, first, the hereditary liability of the patient to cancerous affections, for if this be proven, success is doubtful; secondly, the progress of the local disease, for if the adjacent lymphatic ganglia are

* It is certainly not very logical to conclude that the case cured cannot be cancer, because of a preconceived opinion that cancer is incurable.—*Th.*

found to be involved, success will be equally doubtful; thirdly, the practicability of a complete extirpation, for if a single fibre of the morbid structure be left, it will be a nucleus for a new growth. The last inquiry is particularly important before deciding upon operations on the upper jaw.]

We have not the same opportunity of observing the progress of cancer in the sinus as in some other parts of the body. When perceived, their form and character is established—a hard, irregularly round, livid or leaden tumor, marked with many enlarged, varicose vessels. So caustic is the cancerous humor, that, it is said, a piece of lead laid upon the affected part will, in the space of two months, be reduced in its centre to a white powder. We have an interesting record of a case where a piece of bread was chewed by a cancerous patient, and then given to a dog; very soon he began to foam, and had spasms of the jaw and throat; these symptoms increased until there was strong evidence of hydrophobia [!] and the dog was killed.

[The discharge from an ulcerated cancer is often intolerably offensive and always highly irritating to the surrounding structure, but bears no analogy to the matter of small-pox or syphilis, and much less of hydrophobia, in the ability to propagate itself by contagion.]

If the character, progress and effects of cancer be carefully noted, we shall see in it a three-fold nature; allied to scrofula from its indurated and scirrhus hardness; to scurvy, from its frequent spongy and varicose nature; lastly, to syphilis, in the rapid and malignant progress of its ulceration, and the excoxiating and offensive character of its discharges. To this complication of its essence is doubtless owing the intractability of this disease.

[The feature of incurable malignancy so frequently attending this and other diseases, is a mystery which these crude ideas of our author fails to clear up—a mystery which we conceive it scarcely possible ever to unveil.]

Cancer, when it attacks the maxillary sinus, involves also the bone, rendering it not simply carious, but softening and assimilating it to its own proper substance. Though chance

may have given success in some cases, yet we may venture to assert that such an event is less probable where the sinus is the seat of this disease, in consequence of the difficulty, nay, impossibility, of getting access to all the fibres of the cancerous mass, either by knife, cautery or escharotics. The following cases will throw much new light on this subject.*

CASE I.—In 1730, a young girl, eleven years of age, with a cancerous tumor of the right side of the mouth, reaching to the mesial line of the palate, and attended by considerable tumefaction of the upper jaw, was brought to M. Malaval. He, together with the late M. Petit, both distinguished surgeons, were of the opinion that the tumor, with every vestige of disease in both bone and soft parts, might be completely removed. M. Souchait, however, a surgeon of high reputation, noted the depth of the fibres of the cancerous mass, which, he said, would be found to extend as far as the zygoma, and to involve the maxillary bone in a malignant exostosis; he therefore deemed a cure impracticable, and would class the affection among those to which the term *noli me tangere* had been applied.

[This term has been applied to various forms of malignant disease involving the nose and face. Its name implies virulence of action, as does also its nosological synonyme, *lupus*; yet, though not inapplicable to many forms of cancer, it has, by later writers, been more properly confined to that form of disease which, commencing in one or more small subcutaneous tubercles on the nose, advances by a more or less rapid phagedenic ulceration, to the partial or complete destruction of that organ. Ordinarily, its progress terminates with the loss of the nasal bones and vomer, and therein it differs materially from cancer, which is never thus spontaneously arrested. It differs also in the absence of constitutional disturbance; in the nature of the pain, which has not the peculiar lancinating character of

* Unwilling to enter upon any discussion of the mooted questions upon this much argued subject of cancer, we have chosen rather to give a close translation of our author. Singular as some of his ideas may seem, they are not a whit more false, unfounded or fanciful than the theories of many who have succeeded him.—Tr.

cancer; and in not affecting the surrounding parts by absorption, but spreading by contact. According to Sir Everard Home, arsenic will generally arrest the disease, while milder dressings will be found to aggravate it; sometimes, however, it defies all treatment. From sloughing, syphilitic ulcerations, it may be distinguished by the constitutional symptoms and previous history of the patient.]

CASE II, (from Mauchart.)—A young girl, about six years old, had a very severe attack of small-pox, from which she recovered without the aid of medicine. There remained, for a long time after, (some eight years,) a deep seated, burning pain in the left cheek, followed by an intolerable itching; externally, there was neither tumor nor pain. Various unsuccessful measures for relief were adopted. The young girl one day easily withdrew, with her fingers, the upper canine and second incisor. The removal caused the escape of a very dark, fetid pus. Shortly after, the other teeth of that side fell out, one after another, and were replaced by a cancerous ulcer, which involved, successively, the lips, most of the cheek, and the nose, and which exhaled a most intolerable odor. I saw the patient eight days before her death, and thought that the violence of her pain must certainly prove fatal; but this event was occasioned by the unexpected ulceration of a branch of the internal carotid, and consequent hemorrhage.

CASE III.—In 1774, I was consulted by an old man of sixty, who, for the relief of an inflammatory attack of the right side of the face, had two elongated and loosened molares extracted. Their removal gave scarcely any pain, but in a few days the gum became swollen and ulcerated. The ulceration extended, in a very short time, to the cheek, palate, uvula and tonsils; and the tumor was adherent the whole of the interior of the sinus. In this state, M. Petit and myself saw the patient, and pronounced his disease cancerous, and beyond the reach of art. In three or four months he died.

Another case occurred this same year, in an old man, equally unfavorable. The tumor was at first the size of a pea, but ultimately filled and enlarged the antrum, and began to spread

towards the palatine arch. Cautery had been tried here ; but each application was, as the patient thought, followed by an increase of the disease. I declined undertaking the treatment of this case.

CASE IV.—In 1775, M. Petit sent to me an individual from Beauvais, who had for some time felt numbness in the right superior maxilla. He had some loose and elongated molars extracted, because they interfered with mastication. In a few days a cancerous mass projected from the socket about an inch towards the palate, and filled also the entire antral cavity. Means had been tried at Beauvais, but unavailingly. On his arrival at Paris, we advised him not to submit to any operation, confident that it would prove worse than useless. The patient died shortly after.

M. Moreau, chief surgeon in the Hotel Dieu, tells me he has met many such cases, and knows of none that have been cured. I confess that I undertook the removal of two ; one with the knife, the other with the cautery ; but both operations left my patients in worse condition than before, and death was caused by profuse hemorrhages from the surface of the tumor. A third case seemed to be cured for about six months ; but the disease reappeared on the tongue and palate, and was fatal in six weeks.

Carcinoma is a name given to an indurate form of cancer. It is equally unfavorable as the kind we have been considering : [at present the terms cancer and carcinoma are generally used synonymously.] The following are cases of carcinoma.

CASE V.—In April, 1761, Nicholas Revel, a lawyer of Lyons, aged 55, went to the Hotel Dieu of that city, for the treatment of a carcinoma of the left side of the mouth, which appears to have been the result of a carious tooth. The swelling was great, projecting the left cheek beyond the eye, and deranging the nose. Anodyne and hemlock cataplasms had been used, and pills of hemlock ; but everything seemed to aggravate the disease. On the 4th of September he died, from the impossibility of receiving any nourishment, consequent on the size of the tumor in the mouth.

In this case no surgeon could be censured for not foreseeing so grave a result from so slight an exciting cause. There must necessarily have been some constitutional vitiation, proving the impossibility of success, and telling that the life of the patient was in the hands of a higher power.

CASE VI.—In August, 1761, at the Hospital of Lyons, a carcinoma as large as the fist was removed from the left upper jaw of a man named Berger, aged 75. It commenced by a very small tumor, had increased considerably while at the hospital, and at the time of operation occupied the entire alveolus and rested upon the lower jaw. The cautery was applied to destroy those remnants of disease left by the knife, and the antrum was penetrated. Much inflammation of the whole head followed, and a profuse suppuration; this, however, was reduced, but the carcinoma returned, and the patient died in October.

CASE VII.—In March, 1761, a female aged 46, entered the Hotel Dieu with a carcinoma of the left alveolus, extending from the last molar to the canine tooth, and causing considerable tumefaction of the cheek. An operation was at once decided upon as the only means of relief. This was performed partly by knife, and partly, with a view of preventing any recurrence, by evulsion. Much hemorrhage followed, but this was arrested, and the wound seemed to be doing well. In a few days, however, she complained of pains on that side, and over the whole body, and had high fever. In a fortnight, notwithstanding all remedies, she died.

The reporter of this case thinks it would not have proved fatal if some preparatory treatment had been adopted: but this is a great error. What blood-lettings, drinks or medicines can remove from the system a cancerous vitiation? On the contrary, the time spent in such treatment will serve only to give increase to the disease, and thus diminish the chance of successful operation.*

*The next case is one of encysted melicerous tumor, with several smaller tumors of a scirrhus hardness. It cannot, with any propriety be classed with the above cases, and we therefore omit it.—Tr.

CHAPTER SEVENTEENTH.

EXOSTOSIS OF THE MAXILLARY SINUS.

EXOSTOSIS is an enlargement of the osseous tissue, occurring between the bone and its periosteum, adherent to the former, and distending the latter as it progresses. This distension of the periosteum is a frequent cause of the severe pain of exostoses. [In simple exostosis the pain is usually slight, except when occurring as a sequel of syphilis, and then they are often more properly periostoses—morbid growths of the periosteum rather than of the bone.]

It is distinguished from other tumors by its firm resistance under pressure; its adherence to the subjacent bone, and the absence of any fluid or other heterogeneous formation. Exostosis may be general, and affect an entire bone or the whole system; [in these cases, which are rare, it is more properly called hypertrophy of the osseous system;] or it may be local: it may be either simple or complicated with malignant disease. [Those affections of the bone which are deeply seated, cannot with propriety be called exostoses, although they cause often a prodigious enlargement. Such forms of disease are more or less malignant in their character, and, although they may accompany exostoses, should be kept distinct from them. Of this class are spina ventosa and osteo-sarcoma, which last Sir A. Cooper has improperly described under the terms maxillary exostosis, or fungous exostosis of the medullary membrane.] The scorbutic, syphilitic and strumous diatheses, though frequent causes of exostosis, are not necessary to its production: it may follow fractures, fissures and contusions of the bone.

In vol. 13 of the Memoirs of the Royal Academy of Surgery, will be found several cases of exostosis of the sinus. The

most interesting case of this kind, and one in the treatment of which great sagacity was shown, is given by M. David, chief surgeon in the Hotel Dieu of Rouen. I shall add to this a case of exostosis of both jaws, uncomplicated with carcinomatous disease.

CASE.—Joseph Forcade, surgeon, had a son, who in early years gave promise of great vigor, health and talent. When six years old he had the small-pox, which ran a most favorable course. When twelve years old, his father lanced a tumor at the inner canthus of the right eye, which suppurated for a long time after. Just subsequently to this, a prominence appeared about the middle of the nasal process of the right superior maxilla, and increased gradually, spite of every application, to a considerable size. When the boy was fifteen, both maxillary bones were equally enlarged; the bones of the nose seemed buried between the tumors, and its cartilages were so compressed as to impede breathing. The deformity was great, and at the age of twenty, became, by the continued growth of the tumors, monstrous. The lower jaw became also exostosed, and acquired a very great size.

Though the disfigurement was a shocking one, it did not prevent the individual from gratifying a naturally curious disposition, by travelling about. He was, moreover, talented, lively, fond of good living, and much given to the use of spiritous drinks. At the age of 44 he was seized with a severe malignant fever—his first sickness since infancy—from which he was recovering very slowly, when he was again seized with an inflammation of the lungs, which proved fatal.

Upon a post mortem examination of this case, I found the abdominal viscera free from disease. In the right lung, there were many ulcerated tubercles, and much adhesion between the pleura; the left lung was almost one mass of suppuration, [third stage of pneumonia.] The heart was in its natural state. On the face I could find no trace of any muscles except those of mastication; but the skin seemed drawn tightly over the periosteum covering the numerous tumors. The head and face were every where exostosed, and as hard as marble. When the

brain and soft parts were removed, the bones weighed, in all $8\frac{1}{4}$ pounds—the lower jaw by itself weighed 1 pound 3 oz. The usual weight of an adult male skull is 1 pound 9 oz. ; showing an increased weight, in consequence of these exostoses, of 6 pounds 7 oz. This patient was of middle size, sanguine temperament, florid complexion, and had never complained of pain either in head or face.

CHAPTER EIGHTEENTH.

SPECIAL DISEASES OF THE SINUS AND ADJACENT PARTS.

I HAVE shown how disease of the antrum may arise from local causes, and also as a result of some constitutional vice, and given many interesting cases in illustration. These cavities may become secondarily affected by disease of the surrounding structures, such as fistula lachrymalis, cancers and other diseases of the eye. The following are a few cases in illustration.

CASE I. *Fistula Lachrymalis Penetrating the Sinus.*—In 1760 an individual consulted me about an offensive discharge from the nose which he imagined to be ozena. He had a fistula, resulting from a previous inflammation of the lachrymal duct, about the size of a quill externally, and communicating with the nose below the inferior turbinated bone. I noticed, however, that a part, and that the greater part, of the discharge escaped above this bone and passed backward into the throat. This led me to suspect a connection between the fistula and the sinus, a fact which I proved by a careful introduction of my probe into that cavity through the external lachrymal fistula. I advised the immediate extraction of a tooth although they were all sound, nor would I promise a cure unless this were consented to. The second molar was removed, and the opening into the sinus at the bottom of its socket enlarged, when a free discharge of pus followed. Injections introduced at this opening passed out at the fistula, and through the nose. I then gave the patient over to his physician, and in about two months he came to me perfectly cured. This is a very interesting case.

CASE II.—An infant one year old, delicate, and of rather a livid hue, had cut some of its teeth of the usual color, when a

left incisor appeared, quite black. The parents were surprised but not alarmed, till the adjoining ones came through the gum of the same hue, and a painful tumor began to form on the alveolus. The surgeon who was called in, employed various remedies, and, unfortunately, among these, scarification: the tumor began to ulcerate and spread over the gum and left cheek, nor could the surgeon do any thing to stop it. I was now called in, and saw, after careful examination, how unseasonably and immoderately remedies had been applied. What might long have remained a tumor, had now been made a malignant, livid and dreadful looking ulcer. I stated to the parents the dangerous character of the affection, and the impropriety of interference; at the same time, that I might not seem to neglect the child, I prescribed wholesome diet and palliative applications. But the ulcer spread unchecked, and the infant died soon after with convulsions.

This case is as its reporter, Hertoli, remarks, a singular one. The condition of the discolored teeth is by him ascribed to depraved or defective nutrition. [M. Jourdain argues that the tooth first erupted was cancerous, and itself the source of the subsequent disease of the gum. It was not, he says, carious, and could not have been gangrenous, else it must have induced mortification in the adjoining tissues. Now we know that necrosis of the teeth, which is the only affection of these organs analogous to gangrene or sphacelus of the soft parts, may exist for a long time without serious injury to the alveolus, certainly without danger of inducing gangrene. We cannot but think the state of these teeth dependent upon, and not the cause of, a previous disease within the alveolus. Simple loss of vitality might cause the dark color; or it might, as Hertoli imagines, be connected with some depraved nutrition, as happens with those teeth of peculiar hue which we occasionally see erupted in mouths which have suffered under the influence of mercurials.]

CASE III. *Cancerous Tumor of the Orbit*, (from Felix Plater.)—In a boy ten years old, a tumor starting from the back of the orbit, and progressing forwards, acquired, externally, the size of the fist, and closed the eye to such an extent that it ap-

peared at first sight to be a tumor of the ball. Though an operation was deemed by some physicians advisable, M. Plater was unwilling to perform it, fearful of its cancerous nature, and the great danger of recurrence. It was, afterwards, performed by a quack, who first withdrew the ball almost out of its socket, and then extirpated the tumor, as he imagined, completely; but after the lapse of two years it again appeared, and rapidly increased to twice its former size, covering the cheek below and distorting the mouth.* [From the age of this patient, and from the form, rapid growth, and situation of the tumor, it is probable that this was a case of fungus hematodes of the eye. Its history is incomplete.

CASE IV. *Cancer of the Eye*, (from Willius.)—A female, aged 60, was afflicted with epiphora† of the left eye, which she neglected. The eye became enlarged; purulent matter was discharged at either canthus, and also from the mouth: an ulcerative process was established, so rapid as soon to destroy the eye, eyelids, and all the soft parts of the orbit, and accompanied by very severe pain. The discharge from this horrible looking empty socket, was bloody, purulent, and abominably offensive. The right eye was, as yet, unaffected; the face and nose spotted here and there with small ulcers.

Willius pursued a course of local and constitutional treatment which he assures us has proved very successful in malignant diseases; but though detailing the treatment in the present case, he has failed to give us its subsequent history. The purulent discharge from the mouth, the pain in the left nostril, and also in the teeth of that side, warrant us in the supposition that the sinus was implicated in the disease.

CASE V. *Caries [Necrosis] of the Upper Jaw*, (from Mahon.)—In the Hospital de la Pitié, was a boy nine years old, who had an abscess with caries of the superior maxillary bone,

* It is highly probable that the inferior orbital plate and the maxillary sinus were involved in the disease. It is to be regretted that we have not a further history and an autopsy of this case.

† An immoderate secretion of tears, dependent upon increased or diseased action of the lachrymal gland.

consequent on a malignant fever. On examination I found a semi-circular swelling on the left gum, between the canine and first permanent molar. The gum was drawn considerably upwards on the side next to the cheek, and the alveolus on that side was exposed, and of a very dark color.

M. Brun, chief surgeon, and M. Jourdain, thought it advisable not to await nature's process of exfoliation, but to remove the diseased bone; which was done, with little pain, by means of a gouge shaped instrument. The fragment removed included the sockets of several teeth, and exposed the antrum. The wound was treated twice a day with lint saturated in balsam of Commandeur, &c., and injections of barley-water, &c. During this treatment, which continued fifteen days, there was free suppuration and several exfoliations of bone; the wound appeared healthy, and its cure was left to nature. At this time the semi-circular tumor first mentioned reappeared on the palatine surface of the alveolus; on lancing it, pure blood flowed out, and it was soon healed: the case was then dismissed cured.

CASE VI. (from the same.)—In 1773, I found in the convalescent ward of La Pitié, a girl of 14, of a delicate and languid temperament, who complained of a bad taste in her mouth. I found, on examination, the first molar of the right side loosened, the gum swollen, and from around the tooth came a greenish discharge. I extracted the tooth, though sound, and applied lint soaked in spirits of wine to the socket, which seemed diseased. Upon failure of this and similar simple measures, I had recourse to actual cautery, supposing the alveolar tissue to be involved in disease, and applied it at proper intervals three times. In a few days the bone around the cavity sloughed away, the condition of the patient was much improved, and, by recourse to my first treatment, soon completely restored.

CHAPTER NINETEENTH.

SCIRRHOUS TUMORS OF THE UPPER JAW.

THESE must not be confounded with simple callosities of the gum. They result often from neglected or maltreated abscess, and from too free use of violent discutient and astringent applications: and are more common in the aged and those of a melancholic temperament than in the young and sanguine. Exposure to cold and dampness may also be another cause. As the same causes may excite fungous or cancerous disease in those in whom the constitution favors its production, we should be careful lest in our treatment of scirrhus tumors we cause them to degenerate into ulcerated malignant action.

Simple induration of the gum is quite superficial, and exostosis is a disease proper of the bone; between these two comes scirrhus tumor, with its cyst lying on the periosteum and covered by the gum. [Jourdain's application of the term scirrhus, in this chapter, must not be confounded with the ordinary use of the term as appropriated to the indurated forms of carcinoma. Encysted tumors are, in strictness of nomenclature, those which contain, within a sack, an unorganized mass varying in its degree of fluidity, and called, according to the consistence of the contents, steatoma, atheroma, or meliceris. There are, however, many firm non-malignant tumors which are enclosed in a distinct cyst.]

CASE I, (from Scultet.)—In 1631, Rosine S—— applied for the relief of a hard, red and very painful tumor near the molar teeth of the left upper jaw, which encroached upon the palate, the canine and molar teeth, and much impeded speech and deglutition. She had had a previous one on the same spot, as large as a nutmeg, of four years growth, which had been re-

moved by a barber. The present one had, in another four years, grown to the size of a goose egg. This tumor was slightly ulcerated near the molar teeth, in consequence, probably, of the action of some very strong vinegar which the patient had used to correct the fetor.

The operation of extirpation was performed, October 23, cutting around the base with a scalpel, and completing the removal by a curved bistoury. The hemorrhage did not yield to astringents, and the cautery was used, followed by a compress of burnt sponge and other styptics. Oct. 24: severe head-ache; 25th: compress removed, gargles of plantain, veronica, &c. used, gentle laxative administered; 27th: touched a suspicious part of the wound with spirit of vitriol. On the 29th, the eschar separated, the wound began to cicatrize on the 31st, and articulation was perfectly free. Dec. 3d, the patient was perfectly restored.

CASE II.—In 1760, a friend had a severe attack in the upper central and lateral incisores of one side, followed by abscess. I was anxious to remove the teeth, or at least to lance the tumor; but he would not permit me, asserting that brandy and vinegar would soon relieve his pain. A scirrhus tumor replaced the abscess, and caused disfigurement and difficulty of speech, by raising the upper lip. It resisted all emollient and discutient applications: at length, as my patient became more reasonable, I extracted the two incisores, exposed the tumor by a crucial incision through the gum, and removed it entire. The wound was soon healed.

CASE III.—In 1763, a young student of medicine suffered from inflammation of the left upper incisor, which was followed by alveolar abscess. He refused, from prejudice, to consent to the removal of the tooth. The abscess discharged itself in part, but continued hard and somewhat prominent, and the tooth was loose and painful. The tumor slowly increased, gained externally the size of a small bird's egg, and seemed to work its way between the central and lateral incisores, which were by consequence separated, towards the palatine arch. The patient, having now become uneasy, sought my advice. I

extracted the lateral incisor, and then cut freely through the gum, till I had exposed the whole course of the tumor, which I removed with its cyst. A portion of the bone was, by the operation, denuded of periosteum, but as it seemed healthy, I deemed no application necessary. The wound healed rapidly. The tumor was of the encysted melicerous kind.

CHAPTER TWENTIETH.

FISTULA OF THE SUPERIOR MAXILLARY BONE.

THE best ancient authors agree as to the possibility and actual occurrence of abscess, and consequent fistula of the osseous substance. It may result either from some constitutional depravation, or be the result of blows or external injuries, which, without rupturing the external plate of the bone, inflict injury on its inner cancellated structure; thus a suppuration becomes established, which seeks an outlet by canals more or less tortuous. The disease may be met with in syphilitic, rachitic and scrofulous persons; less often in those of a scorbutic taint.

This disease must be carefully distinguished from *spina ventosa*, which, though characterised by caries and suppuration, is confined to the extremities of bones, near the joints. [Jourdain here limits the *spina ventosa* of Arabian authors to those very frequent diseases, *coxalgia* and white swelling. Other writers, however, extend it to all suppurations within the bone; in this sense it is identical with the disease treated in the present chapter.] I shall confine my present remarks to suppuration of the reticular structure of the superior maxillary, not involving the sinus; observing, however, that the lower jaw is equally liable to this affection.

Albenzoar and Ingrassius speak of the occurrence of this form of suppuration. The latter gives a case of autopsy, in which were found considerable tumors of the sternum, clavicles and some of the ribs, filled with a very offensive pus, which when discharged left in each a large cavity. Hippocrates and Vallezius also make distinct mention of this affection.

In the cases following, it will be noticed that the external fistulous opening is always subsequent to swelling of the bone

and perforation of its external plate. These fistulous openings have, therefore, a direct connection with the disease of the bone. Their treatment must vary with circumstances.

CASE I.—In 1760, a lady suffered with inflammation of the root of an upper first bicuspid on the right side, followed by alveolar abscess. After the inflammation had subsided, the tooth was removed, but a fistulous opening still remained, emitting an ichorous discharge. After three months' endurance of this, the patient took advice, had the fistula cut out and dressed with balsam. It healed, and for five months seemed perfectly cured. But the bone again swelled on the site of the old disease, and now extended as far as the second molar, was very hard, and attended with deep seated pains; the gums were inflamed, and the tumor increased daily.

Consultation was held, and opinions differed; some thought it exostosis; others, that the sinus was involved. The late M. Morand called me in to the case, and we concluded, upon careful examination, that by piercing a swollen spot in the gum, just above the old fistula, we should come upon an opening into the interior of the bone. The introduction of our instrument to the depth of a line and a half, caused a free discharge of sanguino-purulent matter; and the probe passed very freely into the cavity in the bone, the walls of which, above and below, seemed very firm. The socket of the extracted tooth had completely healed up.

M. Morand was in favor of an incision through the gum, for the purpose of excising the distended portion of bone; but, with that unprejudiced liberality which always marks the man of true wisdom, he yielded to my arguments in favor of the cautery. I introduced the hot iron into the fistulous opening three times in eight days, following it up with suitable injections, which frequently brought away small fragments of bone from the interior of the cavity. The alveolus was soon reduced to its natural size, and in forty-three days the patient was perfectly cured.

CASE II.—In 1768, Mad. Massonet was referred to me by M. Moreau, of the Hotel Dieu, for a fistula above and between the

first and second superior incisors. There was, at the posterior part of the palatine arch, a considerable tumor—without pain, softening or change of color. From the summit of this tumor, along the inner side of the alveolar ridge, was a prominent line, which seemed to mark the course of a fistulous canal from the external orifice to the tumor behind.

No further cause could be assigned than the fact that some years previously the patient had received a severe fall, from which time the second molar became painful, and gradually loosened. I removed this tooth, but without any benefit to the tumor. The other teeth were sound. Injections and other means had been tried at the time of the appearance of the external fistula, but unsuccessfully. I regarded the case as one of true abscess of the bone. I ventured, with the approval of M. Moreau, to enlarge the external opening, and make an incision through the entire palatine tumor, which discharged only blood. Suitable injections and gargles were used, but to no purpose. I then decided to lay open with a knife the whole course of the supposed canal above mentioned, and touch it with mercurial water. On the third day, exfoliation of the parts thus touched exposed this canal. The subsequent treatment was very simple, the fistula was readily closed, and in six weeks the patient was sent home perfectly restored.

CASE III.—In 1774, Mad. Bouillard had a fistula on the anterior surface of the superior maxillary bone, the result of an alveolar abscess of one of the incisors. These teeth were so much worn away as scarcely to project above the gum, but were not at all carious. An operator, who was consulted, extracted the second right incisor, which was immediately under the site of the abscess; and subsequently the first incisor of the same side, but without benefit. He then gave up the case, and the lady consulted me. I discovered, by the introduction of the sound, that the fistulous canal extended from the right second incisor, in a tortuous direction, to the left canine; and, as the two incisors on this side were very loose, I extracted them, and found their sockets much softened. By destroying this softened bone, I established a free and direct communication

for the escape of the purulent secretion of the fistulous canal. By medicated pledgets of lint I healed the parts. There was some exfoliation of the alveolar substance, and a cure speedily resulted.

We see, from this case, that caries is not the sole cause of this disease. Irritation and inflammation of the dental pulp may occasion suppuration within the tooth cavity, which, finding no vent in the direction of the crown, must escape at the extremity of the root, and may cause abscess, infiltration of the alveolar structure, and other grave injuries. In such cases a canal might be drilled through the crown, thus giving a direct escape for the matter; but if the suppuration have already extended to the alveolar socket, the extraction of the tooth is most advisable. [There are very few, if any, cases in which extraction of the offending organ would not be by far the most judicious practice. No advantage can result to the patient by allowing the root to remain, unless for the purpose of inserting a pivot tooth; and this operation, upon fangs in the above mentioned condition, is not to be recommended.]

CASE IV.—In 1774, M. Joly, surgeon, sent a servant girl to me, who had had an abscess directly over the roots of the second upper molar of the left side. The tooth had been removed, but still a fistulous opening remained. Various gargles were tried in vain; at last she came to Paris. The opening was so small that a very delicate probe could scarcely penetrate it; within the bone, however, was a space in which the probe could, after its introduction, be freely moved. The socket of the removed tooth was entirely closed, and the enlargement of the bone seemed to be more towards the upper portion of the alveolus. The wall of the cavity, towards the nasal fossæ, was firm under the touch of the probe. M. Joly and myself determined to enlarge the external opening; but after cutting through the gum, we found the bone so hard and unyielding that we preferred the use of the cautery, lest we might inflict unnecessary injury on sound parts. By two applications, at a day's interval, we enlarged the opening sufficiently for the free escape of matter. The swelling gradually subsided, and after some

slight exfoliation of bone, the parts were completely healed under the use of appropriate gargles, injections, &c.

CASE V.—In 1773, a monk of Ourcamp Abbey, named Platet, had the left second molar broken off in an awkward attempt to extract it. An abscess followed this accident, which discharged a great quantity of pus. Remedies were applied, but two fistulous openings remained, from which escaped much purulent matter, and from time to time spicula of bone. At the end of a year he had the root of the broken tooth and two other teeth extracted, which gave vent to much matter, but the openings still continued. Nine months after he came to Paris, and was seen by M. Moreau and myself.

The external plate of the alveolar process was destroyed, from the lost molar as far as the first bicuspid, which tooth was irregularly situated, and above which was a fistula passing above and behind the canine, second and first incisors. The canine and second incisor were loose, and we, therefore removed them, cutting away the fungous flesh with a bistoury. We avoided as much as possible any exposure of the bone, hoping by use of the cautery to arrest the purulent discharge, and establish a new and healthy action. We applied it, at proper intervals, seven times. The suppuration was plainly lessened, the exfoliations of bone occurred in a desirable manner, and the patient is now (1776) perfectly cured.

These cases show plainly the necessity for the use of the cautery, wherever the osseous structure is infiltrated with purulent matter. [A necessity which will not be so apparent to the modern reader. In the cases alluded to, it is evident that the cautery was employed, more because it was *supposed* to be indispensable, than from any absolute necessity. We think that not only was it used when not called for, but that it rendered the cure more tedious.] We notice, also, that where the fistulous canal communicates with the tooth sockets, the cure is prevented so long as the teeth remain; and, on the contrary, that their extraction promptly terminates it. I was effectually taught this lesson in my own experience. A servant many years ago, cut his lip by a fall and loosened a central incisor.

The tooth, however, became again, apparently, as firmly articulated as ever ; but inflammation and abscess resulted. No means used could close the fistula ; for, though I felt through this opening, the fang of the incisor, I was loath, from its good appearance to extract it. At last the patient, wearied with the annoyance, went to another person, who removed the tooth : soon after the sore was perfectly healed.

These simple fistulas, communicating directly with a tooth, may originate from caries of the tooth, or suppurative inflammation of its pulp : also, from fillings sometimes introduced, which prevent the discharge of matter through the decayed crown, and in some cases of pivot teeth. In the majority of cases, if the purulent discharge through the opening is periodical, occurring, say, every month, or fifteen days, there is ordinarily nothing to fear : but if at any time it should cease altogether, there is danger that it may find its way into the alveolar substance and be productive of more or less mischief according to the state of the patient's system. The best treatment in all such cases, is, undoubtedly, the extraction of the tooth or fang, whatever some may say in favor of a favorite remedy. [Alveolar abscess may arise, indirectly, from any cause sufficient to excite suppurative inflammation of the pulp or any of the periosteal tissues of the tooth or its socket. Improper dental operations are a very frequent source of this troublesome affection ; such as the injudicious insertion of pivot teeth, filling pulp cavities after the spontaneous or artificial destruction of the nerve, improper filing, &c. There are, however, other causes of abscess which we are innocent of exciting, and, unfortunately, quite as innocent of curing : such, for instance, as dental exostosis, necrosis and inflammation of the pulp—all of which we are often unable to trace to any satisfactory assignable cause.]

CASE VI. (from Forestus.)—In 1667, a lady of rank from Briel sought advice for a fistula of the gum on the anterior part of the upper jaw. It discharged, constantly, an offensive matter, and during its continuance the two canine teeth became carious. We advised the extraction of the offending root and

two teeth, declaring that otherwise the sore could not be healed ; and that if they remained, injury, more or less serious, might result to the jaw. This was done, and the lady was soon cured under the use of astringent gargles, &c.

The following cases will show that these fistulous openings are not confined to the gum or adjoining mucous membrane, but may show themselves on the cheek or other parts of the face.

CASE VII.—In 1772, a laborer applied to me for the relief of a considerable tumor of the right cheek, with a fistula under the malar bone. I found, on examination, that the crown of the first molar, from which the patient had long suffered, was nearly destroyed by caries, and above it was an abscess, which had imperfectly suppurated. I extracted the tooth, and applied an escharotic to the callous margin of the fistula. The cure was completed in thirty-seven days, by the use of suitable injections and pledgets of lint, charged with a stimulant suppurative and a small proportion of red lead.

CASE VIII.—In 1773, M. Petit, physician, sent to me a boy, who, for a year past, had been troubled with a fistula just below the left nostril. It had come without any previous dental inflammation or tooth-ache, and had therefore been supposed, by those who saw the case before me, to be consequent on caries of the alveolus. A long and painful treatment, based upon this diagnosis, served only to increase the ulcer. It was, when I saw it, as large as a French t'o-penny piece, with the edges reversed, but having, in my opinion, no appearance of cancer. With my probe I could touch the root of the second incisor, which, however, had never given any pain or uneasiness. On pressing my probe upwards with some force, I gave vent to a considerable discharge of pus, yet there was no tumefaction of the gum or loosening of the tooth. I with some difficulty prevailed upon the patient to allow the extraction of the tooth. This done, the pretended cancer healed, under proper after treatment, in eight days. In this case there was evidently inflammation of the alveolar or exodontal periosteum. Local applications of oil of cloves and such like, could result in only

momentary relief; the purulent collection, forced to seek some escape, made for itself a way through the alveolus and lip.

CASE IX.—Some years since, a lady had a right upper canine tooth pivoted. The root gradually decayed around the pivot, and the fang at length suppurated, and abscess resulted. A fistula was formed after several such attacks, which, though treated with balsams for a long time, continued to make progress, and at last opened on the inner as well as outer side of the alveolus, so that a probe could be passed completely through. A portion of the alveolus exfoliated, exposing the roots of the canine and second incisor. At this stage, I was consulted; I urged the necessity of the removal of the two teeth mentioned, which was done by her dentist. The subsequent cure was simple and rapid. Had the pivoted root been extracted on the first appearance of the disease, the incisor might have been saved, and much annoyance and suffering spared.

CASE X.—In 1776, an individual came to Paris for the relief of an affection which resulted from alveolar abscess, over the fangs of a decayed first molar of the right side. After the first attack, although the abscess discharged itself freely, a sensation remained in the cheek, as though there was a small stone there. The second attack, though attended by a free escape of pus, left the cheek hard and swollen, and the eye-lid much distended, with a peculiar clammy feeling (*empâtement*) in the region of the malar and zygomatic bones. I first saw the disease at this stage. On examining the mouth, I found a fistula between the gum and cheek, which penetrated the latter in a tortuous direction, and discharged an ichorous fluid. I removed the fangs of the first molar, but only blood followed the extraction. I now had recourse to poultices to overcome the viscosity of the contents of the tumid mass, and promote free discharge. On the fourth day, fluctuation was perceptible under the eye-lid, and on the sixth day I made an incision there, in the direction of the fibres of the orbicularis muscle. As the swelling subsided, I used a compressing bandage, taking care to keep open the incision till all deep-seated suppuration had ceased; the subsequent cure was attended with no difficulty.

CHAPTER TWENTY-FIRST.

DISEASES OF THE PALATE.*

§ 1.—*Examination of Morbid Diatheses.*

ALTHOUGH the limits of this work will not permit as extended notice of this subject as I could wish, I must still confess that my researches heretofore, though extensive, have not met fully my wishes, nor been carried so far as I could desire. I have noted carefully, however, the many inconveniences to which patients have been exposed, from a frequent ignorance of the nature, cause and treatment of these diseases of the palate.

Prefatory to my remarks, I shall state briefly some of the views of others touching the causes of these affections. Wanderviel, Zacutus and Luzitanus think that venereal disease is far the most common cause: Hildan gives cases of ozena, ulceration and abscess, affecting the palate, where no venereal taint was present, and attributes it to some acrid state of the fluids of the body, and especially of the head. Tulpius mentions a case of caries of the palate, in a female who was *sine ulla luis suspicione*. Severinus mentions a non-venereal apthous disease, which attacks the bones of the palate and upper jaw, the glottis and uvula. So also Ruysch, Ambrose Paré, Guy de Chauliac and M. Duverney mention cases of ulceration, independent of syphilis. The latter cautions us against unnecessary salivation.

* The translator has followed closely the text of the author in this and the succeeding chapters, although there is much in both that is hypothetical, erroneous and devoid of practical value. As translator of Jourdain, he does not feel at liberty to deal quite so freely with the original, as must of necessity be done in adapting these chapters to the present state of the science. Many objectionable positions will, therefore, be passed without any, or at most, with a very brief comment.

These opinions show clearly the necessity of a more accurate inquiry into the effects of each particular morbid diathesis. If rachitis can cause softening and distortion of the bones, and if scorbutus, scrofula and cancer can give rise to caries, why should this disease of the osseous system be ascribed always to a venereal action, and treated accordingly? May we not, by acting too securely upon this theory of syphilitic origin, increase the mischief we design to cure, and cause loss of structures which can scarcely be repaired.

Syphilis is usually more prompt than the other diseases, because more active and searching. Scrofula is slower in its progress, though approaching in some of its symptoms to syphilis. A careful examination of the ulcers in the different cases, and the history of the patient, will furnish the discriminating physician with data to guide him in his practice. I shall, in elucidation of this important distinction, give a brief sketch of such diseases as may attack the palate and its appendages.

Rachitis is closely allied to scorbutus; whilst cancer partakes of both scorbutic and venereal analogies—in the acrid caustic quality of its discharge, the rapid and destructive progress of its ulceration, and its effects upon the bones. Like syphilis, it involves glandular structures, and becomes furious when irritated: to scorbutus it bears a resemblance, in the color and hemorrhagic tendency of its ulcers. The ulcerations in syphilis are of a deep vermilion, with hard and inverted edges; in scurvy they are spongy, but uniform; in cancer, irregular and tuberculated, and of a frightful aspect, with their surface covered by veins ever ready to burst. Scurvy attacks chiefly the teeth and gums; cancer and syphilis more rarely so.

In scrofula, which is nearly identical with rachitis, mercury is a great resource, as in syphilis, though not always so suitable to scurvy. It is less liable than the other diseases to affect the palate, unless in cases of mischievous interference and mismanagement of simple abscess, in which event it is possible that a cancerous tendency may be developed.

Herpes and erysipelas, analogous in their nature to scurvy,

may, after remaining awhile in the system, give rise in the mouth to more or less scorbutic symptoms. The palatine affection is preceded by head-ache, lachrymosis, nasal obstruction, and a change in the color, consistence and smell of the mucous secretion.

§ 2.—*Diagnosis of the different Diatheses.*

Syphilis does not often begin its ravages on the under side of the palatine arch, but usually by suppuration in the frontal and ethmoidal structures, where the pituitary membrane is spongy, highly organized and susceptible to morbid action. The pus flowing thence attacks the spongy bones, which are sometimes discharged through the nostril, in fragments of a soft and greenish appearance. Then the nasal side of the palate is attacked; the membrane and periosteum ulcerate; the bone becomes carious; an abscess is established, which, when opened, leaves an ulcer, with hard, red, inverted and very painful edges. Meanwhile, the pharynx, soft palate and uvula are infected by the discharge through the posterior nares; and, when least expected, the palate will separate from the bone, and the uvula be half eaten away on its posterior surface, as I have frequently had occasion to observe. Syphilis, again, may run a different course in the mouth, and first attack, by a chancrous ulcer, the hard or soft palate or uvula.

Scorbutus is ushered in, almost invariably, by a soft, bleeding and flabby state of the gums, loosened teeth, and dull pains in the maxillary bones. The tumors of the palatine arch are soft, indolent, livid and surrounded with purple spots, which are seen also on parts of the soft palate; the discharge from them is sanious, often the color of wine lees, and of a cadaverous smell. The ulcerations have dark, fungous edges, which bleed readily; and if there be caries of the bone, the exfoliations are of a dark brown color. It is worthy of remark, that whilst syphilis often occurs without affecting the teeth, they are almost invariably involved in scurvy. If a scorbutic patient contract the venereal disease, we shall notice a combination of the distinctive features of the two affections.

Cancer, so much to be feared in its development, presents much of interest in its action upon the bones. Though virulent, it does not cause such palpable loss of substance as syphilis; nor, whilst softening the bone, does it give rise to exfoliation, as scorbutus. It renders the osseous structure cartilaginous, and seems to involve muscle, glandular structure and bone in one homogeneous mass. The insensibility and hardness of carcinoma have led some distinguished writers to suggest a relation between it and scrofula. [Some modern authors of high reputation are disposed to look upon cancer, tubercle and the ordinary forms of scrofula, as only modifications of the same disease. Whatever may be the correct hypothesis of their relation, we must, for all practical purposes, regard them as distinct, and treat them so.]

The abscesses which result from metastasis of herpes, erysipelas, &c. are but little different from ordinary purulent collections; the ulcerations are rather more active and painful than those occasioned simply by dental disease; the caries causes less change of color in the bone; and the cases yield kindly to proper treatment. If the local disease result from herpes, the pharynx and palate will be covered with very painful red spots; if from erysipelas, with pointed pimples. If these spots or pimples should assume a more aggravated appearance, what we have said of the previous diathesis should be remembered, and they are to be treated accordingly, bearing in mind the various sequelæ of measles, small-pox, and malignant fevers. Mercury, in such cases, would be productive of more harm than good. In these, as in fact in all diseases of the palate, constitutional remedies must be conjoined with local treatment. Whenever the removal of an offending local cause is not followed by a disposition to heal, some constitutional vice may be suspected, and should at once be examined and treated accordingly.

Scrofula, which we shall last notice, rarely attacks the palate, unless complicated with some other internal vice. It is essentially a chronic disease and the tumors are indolent and not disposed to suppuration, unless aided by other disease or by mal-

treatment, as above alluded to. We should, as I have said, be careful that the indolent tumor does not, by our mismanagement, become an inflammatory and cancerous one. The contents of a scrofulous tumor of the palate is thick, white and inodorous; the membrane investing them preserves its natural color; and were it not for the pain, the patient would pay little attention to them. We might say the same of scirrhus tumors, but as these rarely occur without some determinate internal cause, their appearance and progress will arrest the attention of the careful surgeon.

§ 3.—*Necessity of a Correct Diagnosis.*

If I have successfully shown that syphilis is not the sole cause of the disease now under consideration, it must still be admitted that it is a frequent cause, and that a painful course of treatment is often the necessary price of licentiousness. Still we must remember that the inconsiderate and unnecessary use of mercury often inflicts lamentable injury upon the mouth, and endangers important organs.

The mouth is the place where we seek to discover and to measure the effects of a mercurial treatment. These effects will vary with the quantity and mode of administering the medicine, with the prudence and susceptibility of the patient, and with the treatment of the surgeon. If, in all cases, even where very small doses are demanded, the mouth is affected, how much more so, where the quantities necessary for the destruction of the syphilitic poison are used. [Quantities, which, under the sanction of the Hunterian theory of syphilis, were carried to an almost incredible amount; inducing inordinate ptyalism, and frequently followed by mutilations and disgusting disfigurements, which might well render the original disease, or even death, preferable to such a cure.] The effects of mercury are marked by irritation, dilatation and ulceration of the salivary ducts, attended by an abundant flow of saliva. If the medicine be continued, the inflammation extends to the soft palate, uvula, cheek, tongue, &c., which become more or

less covered with apthous ulcers. I speak here of the well known effects of this medicine—effects which we find in those who have no syphilitic taint, as, for instance, gilders, looking-glass makers, &c.; for it would be unfair to attribute to mercury alone, effects which it may cause when associated with some constitutional vice. [The conjoined action of mercury, and constitutional disease is well illustrated in secondary syphilis. It is pretty well established, that the well known and distressing features of this affection rarely if ever follow syphilis, when cured by an anti-mercurial treatment; and as they do not attend the use of mercury in other complaints, it is reasonable to ascribe their occurrence to the joint action of the two poisons. We may draw thence a caution in regard to the mercurial treatment of syphilis; and we are the more at liberty to do so now that the possibility of complete cure without mercury is so fully established.] But looking to these undoubted effects, I ask if its administration, in cases where the palate is already irritated and even ulcerated, and this without any venereal taint, be not fraught with much danger? Let us take an example or two.

Garneri tells us of a young man, who, after two mercurial courses, the penalty of his amorous propensity, underwent a third, which was so violent as to cause an inflammation of the palate and cribriform plate, resulting in the loss of these parts, of the epiglottis, and finally proved fatal. A post mortem revealed in the ventricles of the brain a considerable quantity of mercury. As no previous mention is made of the ulceration of the palate, we are left to conclude that this was a direct result of the mercury. Hildan mentions the case of a female, in whom no venereal taint could be suspected, whose gums were rendered sore by mercurial frictions applied to an ulcerated limb. The salivation was neglected, and allowed to run into a putrid ulceration so malignant as to eat away the gums, jaws, nose and lower part of the face. After living some two months in this state, she died. Fallopius says, expressly, that notwithstanding the most careful use of mercurial frictions, the bones will sometimes be attacked. I met, in my own practice, with

an extensive ulceration of the tongue, cheek, soft palate and uvula, from an unnecessary use of mercury. The cases which I shall give below, will illustrate the advantages, as also the inconveniences resulting from the use of this remedy; and will teach the conditions demanding its use, as well as the dangers of its misapplication.

§ 4.—*Effects upon the Bones.*

The constitutional diseases above mentioned may, sooner or later, affect the bone, according to their violence, the structure and situation of the bone involved, and the age of the person. The palate bone is more particularly liable to attack under these circumstances, perhaps, from the fact of its being less compact in its structure than other bones; or from being invested on either side with a soft membrane, peculiarly susceptible to morbid impressions.

Where suppuration and ulceration of the bone results from some internal cause, it is apt to be more destructive than where it arises from simple local causes, from the fact, that in the first case the morbid principle attains, by its sojourn in the mass of the fluids, a greater maturity and virulence. Even when the local disease affects, secondarily, the system, it is still more controllable than the constitutional malady. When, for instance, abscess of the palate is the result of dental disease, the removal of the offending tooth will relieve the patient and cause the abscess to assume a favorable appearance. But if some internal vice be present, constitutional remedies must be employed, and only in proportion to the success of these shall we find the local disease improve.

The action of the air, and of the secretions of the mouth tend to increase that acrid character, inseparable from ulcers generally, and also from ozena—the more so if aided by some prevailing morbid diathesis. Again, ulcers of simple local origin, and deep seated neglected excoriations, may, if suffered to act upon the periosteum, cause denudation of the bone and consequent caries.

Puncture, laceration and contusion of the periosteum is usually more serious than simple incision, because the suppuration which is apt to result from the violence attendant upon such injuries, is prevented from escaping in consequence of the premature closure of the external wound, and an abscess, more or less extensive, is formed. The centre of the opening of this abscess, whether made spontaneously or by art, will usually be filled with shreds of carnified periosteum, partially destroyed, but still adherent to the bone; it is rare in such cases not to find the bone somewhat implicated.

Violent blows upon the palate may affect it in two ways—by injury done to the mucous membrane and periosteum, also by injury to the osseous structure. In either case, inflammation, tumefaction, and even partial mortification may result. In infants the palatine vault is so yielding, and its suture so incomplete that violence may readily cause a displacement, and consequent irregularity of the arch. This accident is easily recognised. External violence may injure the reticular structure, whilst the external plate of bone returns by its elasticity to its former position. Thus suppuration within the bone may be established; giving usually not much pain, causing no discoloration of the membrane of the palate, and having the appearance of an exostosis, till the establishment of a fistulous opening reveals its true character.

Polypus may affect the palate directly or indirectly; its action being dependent on its character. Those which are red or whitish and of fleshy consistence are less to be feared than the soft, spongy and vesicular forms. These last are prone to assume malignant action, and especially so if they are found to burst spontaneously and bleed freely. Those polypi of the frontal and ethmoidal cells which invade the palate, seem, apart from their spongy nature, to have a venereal, scorbutic or cancerous origin; this causes them to attack the adjoining surfaces, and gives to any humor which may be present a vitiated quality which penetrates by ulceration to the bone, and involves it in caries. When these polypi pass into the maxillary sinus, the entire membrane of all the sinuses is involved; so

that upon their removal, however complete in one place, they are reproduced in another, in consequence of the impossibility of reaching the root of the disease in the frontal and ethmoidal cells.

But if the polypus thus formed in the upper part of the nostril be solid, and keep this consistence, it is difficult to see how, in the adult, it should affect the firm palatine arch, and not rather pass towards the anterior or posterior nares. In infants, however, while these structures are soft and yielding, the action of such a polypus is readily conceivable. It may, by pressing one part downwards towards the mouth, cause an overlapping of the two halves of the palate, thus producing a species of semi-luxation.

In this class may be mentioned those fungous tumors which arise from the lower part of the nasal mucous membrane. They assume, gradually, a malignant character, and in proportion to their nearness to the palate will be their ravages upon it. They are not always, however, confined to this, but may involve the nasal walls and even the maxillary sinus in destructive ulceration. Still, these tumors, though very grave, are less so than the first mentioned polypi. They moderate their violence after the partial loss of the palate; and, again, the surgeon has an opportunity, by the removal of certain teeth, to gain access to the tumor, and apply his remedies.

The venereal, scorbutic and strumous diathesis may yield to a well directed, and judicious local and constitutional treatment; but if the polypus tumor, in whatever part of the nostril situated, have a cancerous character, it is impolitic to promise a cure. The bone immediately under the origin of the polypus will usually be found carious.

Critical depositions, quinsy, &c., may induce caries of the palatine arch in consequence of the acrimony of the purulent secretion. These depositions occur either at the close of some disease, from an effort of nature to get rid of a morbid humor in the system; or in consequence of a metastasis induced by the unguarded treatment of certain diseases. In the first case some dental affection may determine the transfer of the morbid

fluid to this particular locality, or it may take place without any such exciting cause—as in measles, small-pox, and malignant fevers. Instances of the second class are met with in certain cutaneous diseases, the cure of which is attempted by the use of washes, ointments and powders. This last kind of metastatic revulsion is more formidable than the first, from the fact, perhaps, that in the one the constitutional vitiation is at its height at the time of the transfer, and in the other it occurs at the close of the disease when such vitiation is nearly extinct. Local treatment will generally suffice for the first but not so for the last. The remarks above made respecting the scrofulous, scorbutic and venereal diatheses, also concerning the nature of purulent or other vitiated secretions, will suffice, I think, to guide the reader to a correct knowledge of the nature, progress, effect on the palate, and treatment of those ulcerations peculiar to the nostrils, known as ozena.

CHAPTER TWENTY-SECOND.

CARIES.

§ 1.—*Its Causes and Signs.*

THE merest tyro in surgery knows that the existence of caries in the bone prevents the firm and permanent reunion of wounds of the investing structures. By caries, is understood a solution of continuity in bone, with more or less loss of substance, and is analogous to ulceration of the soft parts. [Notwithstanding this definition, the author constantly, in all parts of this work, includes under the one term caries a very distinct disease—necrosis, which bears the same relation to mortification of the soft parts that caries does to ulceration. This extension of the term caries must be borne in mind by the reader, as I shall not, in all cases, see fit to notice the inaccuracy, if such it can be called.]

Caries may arise solely from external injury or local causes, or solely from internal constitutional vitiation, or conjointly through the action of both. In the first class we place all accidents which may deprive the bone of its periosteum; blows, fractures, fissures, and all solutions of continuity of the investing parts; and the too long exposure of the denuded bone to the air or to the action of acrid or corrosive medicines. In the latter class are all the morbid diatheses mentioned in the last chapter, syphilis, scurvy, scrofula, cancer, &c.; the reaction of measles, small-pox and putrid fevers, and the metastasis of suppressed cutaneous diseases, &c.

Caries, from whatever cause arising, is attended with destruction of the periosteum: unless we regard the disease called spina ventosa as an internal caries, which may exist for a considerable time without external signs. The dark or greenish

yellow color of the pus often bloody and streaked, the soft and inverted condition of the edges of the ulcer, and the fungous appearance of its centre—are symptoms which mark caries of the bone. M. Strack, physician, however, gives an instance in which these signs were all present without caries. It is prudent, therefore, that we do not draw our conclusions too hastily. A piece of cotton between two sound teeth, or lint saturated with any animal secretion, and retaining the temperature of the body, may become offensive and discolored, and the more discolored if any dark medicines have been used. Thus, we see, the greater necessity for caution.

Of all means for the recognition of deep-seated caries, the sound or probe is the surest. It requires, however, an accurate knowledge of the normal inequalities of the affected part lest we mistake a natural roughness for a diseased one; and, hence, we learn the importance of being practically familiar with all parts of the body, and not simply a theoretic anatomist. In the use of the sound upon very young persons, we should be careful not to apply too great force, lest we penetrate through the external vitreous plate of bone, which in them is very delicate, into the reticular structure, as I have seen happen with sharp steel probes. These instruments should be of silver or gold, and if delicate, they should have a knobbed extremity. [If of silver, and very slender, they will more readily follow, or can be so bent as to adapt themselves to, the tortuous course of many fistulous canals connected with caries and necrosis.]

Some authors recommend striking the bone with the probe, and judging of the presence of caries by the degree of dullness in the sound emitted. But this plan, though possibly very useful in some cases, would not answer in all; as, for instance, where it became necessary to strike on the maxillary bone through an orifice communicating with the mouth. In this case, the modification of the sound within the buccal cavity might prevent the certainty of our diagnosis. It becomes the enlightened surgeon to consider a subject in all its relations; otherwise he will fail properly to fulfil his obligations to society.

[The application of the finger to the diseased surface is, where practicable, a still more delicate test of the existence of necrosis.]

The indications of superficial caries are—a bad condition of wounds, ulcers, fistulas, &c.; indisposition of all solutions of continuity in soft parts to unite; an acrid, fetid, streaked and yellowish-green character of the purulent secretion. These conditions lead to a strong suspicion that nature is seeking the expulsion of some offending substance; and in case of confirmed caries—which is gangrene of the bone—the above symptoms will exist in more aggravated form. [Ancient writers, as before observed, include under the term caries, the disease necrosis, distinguishing it sometimes by the terms dry caries, gangrenous caries, or, in the words of our author, confirmed caries, (*carie décidée*.) The celebrated Weidmann, in his work “De Necrosi Ossium,” shows conclusively that the purulent discharge attending necrosis is not necessarily or always dark, sanious or fetid; but that, in good constitutions, it may be, and often is, whitish, thick and inodorous.]

The above indications do not, it is true, absolutely prove the existence of caries, but they afford strong presumption, which we seek to confirm by the surer guides of sight or touch. If the surface of the bone be exposed, we can readily detect the presence of caries by the color, which will vary with the progress of the caries and its exciting cause. In establishing our ideas of the color of healthy bone, we must of course examine those of the fresh subject, and not the dried bones of a skeleton, denuded of periosteum. [Necrosed bone is often black or dark colored, but not necessarily so; it may be whiter than is natural, or, if dark colored, may be covered with a white discharge, and in such cases color alone will be an obscure guide.] When the eye cannot aid us, we then have recourse to the probe, by which we discover the presence or absence of the periosteum; an unequal, rugged and pitted, instead of the smooth regular surface of bone; and the ease with which the bone is pierced, whereas, in healthy bone, the periosteum cannot be penetrated except with difficulty and pain. [The porous char-

acter of carious bone, giving it, after maceration, the appearance of pumice-stone, or of a lump of partially dissolved white sugar, is the result of what pathologists term *interstitial* absorption—as distinguished from *progressive* absorption, occasioned by pressure and unattended by suppuration, and, again, from *ulcerative* absorption, such as is met with in caries, which does not penetrate the cancellated structure.]

Absence of periosteum is not, however, sufficient of itself to establish the existence of caries: for this may occur, and that to a very considerable extent, without caries or exfoliation. Exfoliation necessarily presupposes loss of vitality, and this is by no means invariably consequent on denudation. M. Martin, and after him M. Pietsh, when they charge the ancients with holding the doctrine “that denuded bone necessarily exfoliates,” and claim to themselves the merit of establishing the opposite position, are guilty of a great mistake.

Hildan expressly alludes, in terms of strongest condemnation, to the practice of those—“who, under the idea that bone deprived of its periosteum cannot heal unless exfoliation first takes place, resort, when this fails to occur in the regular course of nature, to their scrapers and drugs, ointments and caustics, and at last succeed in establishing a sore of a very malignant appearance.” This celebrated and estimable author further directs, in all such cases, that the patient be kept in a temperate atmosphere; that the exposed bone be covered with dry lint; and that, in all cases where ointments are used, they be not allowed to penetrate to the deeper parts of the wound, or to the bone. He mentions several cases in illustration of these views: one of extensive denudation of the skull, in a man aged fifty; another case of denudation of the skull, with depression of the bone, in an infant six months old; and a third case of denudation in the tibia, followed by severe inflammation. In no one of these instances did caries or exfoliation occur; and very many similar cases might I cite from old authors, in proof of the error of MM. Martin and Pietsh, who, in fact, seem to have consulted those very men whom Hildan so justly censures.

This author furthermore adds, "Exfoliation does not invariably follow denudation of bone, though arising from internal causes. If the humor be mild or soon discharged, the bone may not suffer; but if it remain for a long time in contact therewith, or if it be of a malign character, as in syphilis, small-pox, &c., the bone will become diseased." Again, Ambrose Paré, speaking of the treatment in the case of an arrow which entered the bone, and of course wounded the periosteum, directs the withdrawal of the arrow, and adds, "if the wound be simple, treat it as simple." Thus not only a denudation, but a lesion of periosteum and bone, is treated as a simple injury. Many more authorities might be cited, but I have said enough to show conclusively the error of M. Martin. [If necrosis result from abscess in any particular case, it is not so much in consequence of any corrosive quality of the pus, as the ancients supposed; the inflammation which causes the abscess may extend to the bone and periosteum, or the simple presence of the pus, as of any other offending foreign substance, may excite inflammation, which shall result in caries or necrosis, or these latter may be the cause and not the effect of the abscess.]

The size of the external tumor, the quantity and quality of purulent discharge, the size of the ulcerations, and the course and number of the fistulous canals, furnish data for judging of the extent of the diseased bone. The depth of the caries can best be learned by the use of the probe.

The indications of internal caries—by which I mean to imply a purulent condition of the inner structure of bone, without any external abscess, fistula or ulcer, as we see in *spina ventosa*—are much more grave than those of the first mentioned caries. In *spina ventosa* the skin and neighboring parts are not changed in color. The pains, at first dull, increase in intensity as the bone begins to enlarge. The external lamina of bone is less solid than natural, and gives no crepitation under pressure. As the morbid secretion is contained within bony walls, there is, of course, no fluctuation. This disease, if neglected, softens the bone and renders it carcinomatous; or else destroys by caries and purulent infiltration the entire cancellated structure,

and renders the outer plate of the bone so frail that it yields to the slightest pressure. Syphilis and cancer are regarded as the usual exciting causes of this disease: I might add also scrofula. When I come to speak of diseases of the lower jaw, I shall give two cases illustrative of the difference between this and exostosis—the one persists after the removal of every constitutional vitiation, whilst spina ventosa, if neglected or maltreated, is productive of most serious consequences.

[Necrosis occurs mostly between the ages of ten and twenty, and is a more frequent result of direct violence than caries, which is more apt to occur in those who have some constitutional vitiation—venereal, scorbutic, scrofulous, or cancerous. The first attacks, most frequently, the denser portions of bone, which have less vitality than the spongy substance, and is, therefore, more common in the shafts of the long bones than in the flat or thick bones, though it does sometimes occur in the cancellated osseous structure. Caries on the other hand happens, usually, in those parts most supplied with vessels, and, by consequence, most able to sustain a continued morbid action. We shall find that, in the affections of the bones of the face, caries and necrosis are usually combined.

There is a form of this disease, first specially noticed by some American writers, which attacks children between the ages of two and five years. It is found in cases where mercury has been abused in scrofulous constitutions; among the sequelæ of variola and scarlatina; and, also, where bad food, foul air, &c. have injured the health. The following description of the disease is from the pen of Dr. Francis of New York. “The disease frequently began at the edge of the gums, in contact with the incisor teeth. The soft parts became tumid, with hardness and pain. Sometimes the greater part of the side of the face assumed an erythematous aspect, without any premonitory signs; and this was subsequently marked by spots of a dark purple or brown color. Sometimes the part became speedily sphacelated, the sloughing commenced, and emitted a fetid exhalation. The tongue was loaded with a foul sordes, and the breath exceedingly offensive, when coma would

supervene, and death suddenly ensue. In other instances the teeth would become loose in the commencement of the disease, and not unfrequently drop out on the slightest exertion or motion of the jaw. The necrosis would, in some cases, involve full one side of the jaw, and the ulceration extend equally over the soft parts, and affect the *alæ nasi*, the nose itself, and the cheek nearly to the orbit of the eye. Very soon the sphacelated flesh fell in, and the internal structure of the mouth would be exposed, while the lips would become tumid, painful and discolored. These morbid changes, to greater or less extent, were found to involve very speedily the teeth, alveoli, mucous surfaces and cheeks.” The disease is a dangerous one, and when fatal, rapidly so.*]

§ 2.—*Treatment of Caries.*

Caries from local causes is less dangerous than that which depends on internal causes. The fluids have, if I may so express it, a more passing and momentary vitiation, and will yield to treatment unless aggravated by injudicious operations, dictated by prejudice or routine practice. Caries from the latter cause demands the aid of the physician as well as the surgeon; nor can surgery, without such constitutional measures, hope for so speedy a cure as in caries from simple causes. The loss of substance is usually less in the strictly local disease, than where it is associated with scurvy, syphilis, &c. In the one case if, when we detect the presence of any heterogenous fluid, we immediately remove the cause of its secretion, and promote its free escape, nature will herself, as a thousand instances prove, accomplish the exfoliation of the necrosed bone, especially if we avoid injudicious meddling. In the other case, it not unfrequently happens that the entire substance of the bone is affected by the internal vice before we have external manifestation of the local mischief, as happens sometimes in spina ven-

* For a very able article on the subject of necrosis we would refer to the Surgical Dictionary of Samuel Cooper, where will be found also a full list of the many treatises on this highly interesting disease.—*Tr.*

tosa. In bones containing cavities or canals, caries presents many difficulties in treatment.

In our treatment of caries regard must be had to the previous duration of the disease, the bone in which it is seated, and the age of the patient. Spiritous desiccants, balsams, &c. may answer for the highly organized and easily stimulated bones of the young: but cauteries and escharotics are requisite to excite similar action in the bones of older persons—applications which would be hazardous to the delicate structures of early life. Again the differences in their thickness, the solidity of their external plate, their proximity to important organs, are points to be observed in practice.

We sometimes meet, in aged persons, a firmness of texture in the vitreous portion of bone that resists every means of cure, even the cautery. A striking instance of this occurred in the case of an old man of 60, sent to me by M. Moreau, who had caries of the lower jaw. Six applications of the actual cautery were made within three months, and still no exfoliation resulted, but the caries enlarged. Yet the disease was simply the sequel of an alveolar abscess, and was uncomplicated with any constitutional disturbance. M. Moreau assured me that this was not the first case where a simple local caries had resisted such treatment. [If M. Moreau had said this was not the first time in which he had seen a surgeon's officiousness impede nature's process of cure he would have spoken more correctly.] Paré alludes to such cases when speaking of "bone which by exposure has become so hard and altered that no instrument can penetrate it without great pain; this change and corruption may be detected by the sanious discharge of the ulcer," &c.

The duty of the surgeon, in necrosis, is—to relieve the bone of any offending heterogeneous substance; to oppose its recurrence, and remove all constitutional vitiation; to cause as little destruction of substance as possible, and to be careful of adjoining structures; to heal all lesions of soft parts, and in doing so to see that the bone be well covered. He should consider the design and the extent of the exfoliation in progress; the

propriety of aiding nature, or awaiting her unassisted issue; and the means best suited for each case.

With reference to the situation of caries in the mouth—it may commence in front of, or near the incisores, extend along the alveolus and involve the anterior part of the palate or the maxillary bone: or it may begin at the side of the palate, denude the molar teeth with their alveoli, and extend as far as the maxillary sinus, committing great ravages: again it may begin at the mesial line of the palate, spread on either side, attack the vomer and destroy it as well as other parts of the nose. If it occur at the back part of the palate we may fear perforation of the veil and loss of the uvula. If it originate on the sides of the nasal fossa it may spread to the palate and maxillary bone; and caries in this location is more to be dreaded than on the palatine arch, because of its inaccessibility, its constant saturation with mucus, and the readiness with which these spongy tissues assume diseased action. The nasal wall of the sinus is also quite often destroyed; but in these cases there is usually some constitutional vitiation.

In the treatment of caries we should consider its degree, which we may regard as three-fold. In the first degree, the caries is recent, quite superficial, the result of local causes, and but slightly altered from the natural color of bone. In the second degree, the caries penetrates to the spongy tissue of such bones as have any; the color is more marked, the appearance of the ulcer and suppuration is such as indicates an internal as well as a local cause, and the surface of the carious bone, instead of presenting the simple asperity of the first degree, is softened so as to yield before the pressure of the probe. In the third and last degree, both color and structure are entirely changed: the loss of substance is considerable, and the bone presents that corroded appearance, giving rise to the term worm-eaten caries; the exfoliated bone is dark, yellow, or greenish, according to the internal vice accompanying the disease.

Although it is best to trust the exfoliation of necrosed bone to nature's efforts, the surgeon will be called upon to open ab-

scesses, remove fungus, and enlarge fistulous canals. The shortest method is the best for these purposes, and, therefore, the knife is far preferable to escharotics or plasters. Care should also be taken to prevent any injurious action of the air upon the carious surface. In caries of the first degree a dressing of lint, either dry or soaked in spirits of wine, laid over the wound is sufficient. We must be particular not to allow the soft parts to heal over the bone before the process of exfoliation is entirely complete. To this end, dilation with prepared sponge or medicated pledgets of lint, and the removal of fungous granulations may become necessary. In caries of the second degree, occurring in the alveolus or palate, as the result of abscess, when the sequestrum seems detached around its entire circumference, we may attempt gently its removal with an elevator. But if it be still adherent, a light application of mercurial water or spirit of vitriol may be made. These applications I prefer to the oil of camphor recommended by many authors, because I have found that the secretions of the mouth weaken its action.

[In necrosis, which is identical with Jourdain's "caries of the second degree," we cannot do better than follow the judicious advice given by Weidman, who, after approving such measures as are consistent with and assist nature, without teasing the patient, says, "in short, the indications are limited to removing the original cause of the disease; alleviating the symptoms; supporting the patient's strength, and improving the state of the constitution in whatever respect it may be bad; and, lastly, removing the dead portions of bone when they become loose."]

The above method I prefer to the rasps, scrapers and perforators, of which some moderns make such indiscriminate use—a practice which under certain circumstances cannot fail to be highly pernicious. Healthy and necessary structures are destroyed, and the parts become unable to support the repeated use of these instruments. If, according to their theory, a fresh surface must each time be gained by scrapers, &c. for the deeper action of medicines, then at what point shall they cease?

Doubtless, when the bone is destroyed. In the delicate bones of the face, will not such unprovoked destruction result in annoying deformities? Ambrose Paré condemns this course of treatment except where the bone is of considerable extent, thickness and solidity, and, I may add, is visible to the eye of the surgeon. These persons say, that they use scrapers, &c. till they are no longer necessary, but this language is vague and unmeaning: they should give definite reasons for commencing, and indications for ceasing, their use.

[“A common error in medicine and in surgery, is to impute the cure of a disease to whatever remedies happen to be used; and successes are too often boasted of, the merit of which belongs entirely to nature. It is, indeed, not very unfrequent to hear remedies panegyrically spoken of which counteract the salutary efforts of nature, who, in this case, is obliged to overcome the disease, and the irrational treatment which is applied to it. As Weidman observes, this erroneous mode of considering things has happened particularly often among surgeons who have had cases of necrosis under their care, all of whom boast of the cures which they have accomplished, although some employed absorbent earths, others, aromatics; some, spiritous applications, others, balsams; some, acids, others, caustics; some, armed with a wimble, made numerous perforations in the dead bone, while many others rasped the part, or attacked it with the trepan, cutting forceps, gouge and mallet, or even actual cautery; while a certain number did nothing more than apply dry lint. Nature, favorable to all, worked on in silence, whatever the remedies employed in her assistance, whether mild and inert, acrid and corrosive, or hurtful and improper.” These judicious remarks from the pen of Samuel Cooper, will apply not only to those whom our author censures, but also with equal force to much of his own treatment of various diseases of the bone, the cure of which he unquestionably, in many cases, prolongs by the officious employment of injections, ointments, escharotics and cautery.]

The perforator will be found useful in making counter openings, or enlarging those already formed. Without such open-

ings the surgeon would, in many cases, be unable to render any aid; yet I must repeat, that we cannot, in the use of these instruments, exercise too great caution. [We frequently find, especially in the shaft of long bones, that nature strengthens, by the formation of a provisional callus, the bone, which otherwise would be much weakened by the loss of the necrosed portion. This provisional structure often invests the dead bone; at other times the sequestrum is enveloped in the original bone; and in either case there are usually one or more openings for the discharge of the morbid fluids. Unassisted nature will best accomplish the separation of the sequestrum, by a process of absorption in the surface of sound bone in contact with it. But when this sequestrum is separated, if its escape be in any way impeded, nature will require the assistance of the surgeon. Free incision into the soft parts is first requisite, and if the necrosis be superficial, this is all that is necessary. But if deep seated, and the *cloacæ* or fistulous openings in the bone be too small, these must be enlarged by saws, trephine, gouge and mallet, or other suitable instruments, sufficiently to admit of the ready extraction of the sequestrum. Sometimes the dead fragment may be so large as to render it advisable to break it in pieces before removal; sometimes, again, where we make the necessary opening through the new bone, or callus, it may be so soft, especially if recent, as to be cut with a strong bistoury, and thus we are saved the use of gouge and mallet, &c.]

In caries of the third degree, local operations, and the use of rasps, scrapers, &c., are worse than useless. If the dead bone be completely detached, we may aid in giving it free exit. Beyond this our efforts must be directed to the constitutional treatment, as this third kind of caries argues, almost invariably, a morbid diathesis. [Such measures, where the system is debilitated or unhealthy, are very proper; but if used with a view to promote the separation of the sequestrum, the same disappointment will follow as attends the use of local means for this end. It is possible that preparations of iodine, from their well known action upon the absorbent system, might have some effect in hastening this step in nature's cure.]

If the caries be disposed to progress rapidly into the deeper portions of the bone, it then becomes absolutely necessary to endeavor to supplant the diseased action. For this purpose the actual cautery merits the preference over all other applications; but, unfortunately, it cannot be used in caries of the palate, because of the delicacy of these structures and the difficulty of avoiding injury to the surrounding organs.

[In caries and necrosis, where any venereal, scorbutic or scrofulous taint is associated, as often happens, we must address suitable remedies to their removal, alike in both cases. But the local treatment of these two affections differs. In necrosis the indications are, briefly—to remove the offending local cause; to await patiently the separation of the sequestrum, and possibly to aid nature by iodine, in some of its many forms; lastly, to secure a speedy and complete expulsion of the sequestrum after its complete separation. In caries we are called upon for a more active local interference, partly because we have not full control over that constitutional disease, scrofula, which so often accompanies this affection. Blisters, issues and setons may be tried with a view to divert morbid action, and in failure of these, escharotics, cauteries and cutting instruments may be resorted to. Where the cancellated structure is carious, the actual cautery was regarded by the late Robert Liston as indispensable. The opinion of this distinguished surgeon is the more valuable, because of his strong disapprobation of all unnecessary interference with nature's *modus medendi*.

§ 3.—*Indurations and Fungous Growths of the Palate.*

Inasmuch as caries frequently arises from abscess, and this often assumes a callous or fungous character on its edges, we shall briefly consider the treatment of these accidents. We may use ligatures where the fungus is pedunculated, the knife where it has a small base, escharotics where it is small and benign. But if it have a malignant aspect, extending to the periosteum and perhaps to the bone, the actual cautery must follow the knife, in order to the complete extirpation of its

fibres and the supplanting of diseased action. Much care must be used in all such use of the actual cautery. Butter of antimony, potassa cum calce, and even corrosive sublimate, may be so carefully and judiciously applied as to produce none of those dangerous effects of which some authors speak; at the same time they are so susceptible of abuse, that I would recommend other measures.

If the border of the ulcer be callous, I should advise its removal with the knife, rather than escharotics, lest these cause ulcerations of the softer contiguous parts, and also increase the callous conditon they were designed to cure. If, however, the induration extends to the bone, cautery may be necessary; but in such case we should so regulate the heat of the iron, as to avoid too great irritation of these delicate structures, lest, by exciting inflammation, we cause suppuration, exfoliation and loss of important organs. We should also be careful that we do not, by such means, develop a latent cancerous tendency.

Simple chancrous ulcers may be destroyed by spirit of vitriol, mercurial water and such like escharotics, associating these with suitable gargles, and an appropriate anti-venereal treatment. But if these ulcers become stubborn, and assume a malignant cancerous aspect, active measures must at once be suspended, and a palliative treatment adopted.

§ 4.—*Treatment of Diseases of the Palate.*

Experience, freed from prejudice and routine practice, attests the inefficacy of balsams when applied to diseases of the palate. In fact, their slight effect is admitted by the surgeon, in the necessity for the use of scrapers, &c., whereby to procure a fresh surface of bone for their action. It is not so when balsams are applied to any external part, for there they may exert their full effect; but in the mouth they are continually dissolved by the secretions and lost through the outlets of that cavity; they excite nausea and perhaps emesis, and by mingling with all the patient's food and drink, are calculated to disgust him with his course of treatment.

It is said that balsams oppose the putrefactive tendency of pus. More correctly, they, from their desiccant tendency, check its discharge, and in this act contrary to a rule of medicine which calls on us to promote free suppuration in ulcers and abscess, for the more speedy riddance of the system from morbid humors.

In all wounds, we should regard the cut extremities of the vessels as the channels through which nature seeks to discharge all morbid humors of a part. Consequently, when the constitution is healthy, a simple application of dry lint, with a view to keep open the wound consequent on necessary operations, together with suitable gargles and injections, will be found productive of the happiest results. If, on the other hand, we seek, contrary to nature, to close such wounds, the morbid fluid will seek other channels, make progress, of which the surgeon is unconscious, and at length result in a fistula, which will sometimes be difficult to heal.

I confess the difficulty of retaining any dressing in contact with the palate. But I shall describe some plates for this purpose, of my own and others' invention, which will, I think, obviate much of this objection, and do away with the inconvenient plan of directing our remedies to the palate through the nose. [Cases are very rare, which really demand any such complicated appliances as our author alludes to. In fact, the situation and relations of the palate demand that our local remedies be as simple as possible, and quick in their action.]

CASE I.—In 1766, M. Noel had a tumor of the palate, which, on pressure, discharged pus through one fistulous opening on the outer side of the right alveolus, between the canine and incisor, and another in the socket of the second molar, which had been removed some time since. The patient would not consent to proper measures in the first instance. The canine, incisores and first molar became loose and were extracted; the alveolus around the site of the second molar sloughed away; the tumor still continued to enlarge, and some embarrassment was felt in the nostril; the patient then put himself under my care. The tumor, when lanced, discharged a

very fetid pus, and I found, on introducing my probe, that a portion of the palate and maxillary bones were necrosed and almost completely detached. I removed them with ease; the one from the palate was the size of the nail of the index finger, that from the maxilla larger. The removal of these sequestra exposed the pituitary membrane of the floor of the nostril, as was proved by the sneezing excited by touching it on the lingual side. I dressed the wound for some days with dry lint, and then used gargles, &c.; in twelve days the cicatrix was complete.

I have treated many similar cases, arising from simple abscess, the sequel of dental disease. I have always, where the opening was of sufficient size, either awaited the natural separation of the sequestrum, or, when assured that it was no longer adherent to the sound bone, gently withdrawn it. Simple causes may often be productive of extensive injury as the following case will show.

CASE II.—In the same year a bailiff named Broch, had a tumor of the palate as large as a pigeon's egg, with swelling of the nose and upper lip, consequent on a decayed condition of the teeth. Pus escaped from the nose, and there was a fistulous canal from the second incisor to the first molar of the left side. As the case seemed an urgent one, I removed the decayed teeth and stumps, thus destroying the fistula. I then excised the palatine tumor, found the bone carious, and the nasal membrane covering it perforated, which accounted for the discharge of pus from the nostril. I first employed dressings of dry lint, emollient and detergent gargles, and after the subsidence of local inflammation touched the bone with mercurial water twice in eight days. In this time, the sequestrum separated, leaving an opening into the nostril about the size of a quill, which was closed by a prolongation of the mucous membrane. I made use of dressings of dry lint, gently applied, and occasional styptics to suppress exuberant granulation. The entire cure occupied six weeks.

When the disease has progressed so far that pus is formed and collected in such quantity as to prove embarrassing and

even dangerous to adjoining parts, it becomes necessary, in opening these deposits in soft parts, to prevent any retention of matter by giving a free discharge. In some difficult cases we must resort to expulsive and antiseptic measures; as will be seen in the following case.

CASE 3.—M. Baptissien, a young man, suffered from an alveolar inflammation and abscess over the two left incisores. The nose, lip and palate were all involved, and a phlegmon formed on the upper part of the lip, the matter of which penetrated the bone, and extended along the alveolus and left side of the palatine arch. I extracted the two incisores, thus giving vent to much matter, and found the alveolus, maxillary arch, and anterior part of the palate carious. The alveolar fragment of necrosed bone was nearly detached, and I easily separated it. This opening gave me free access to the other diseased parts, the separation of which I readily secured by the application of mercurial water, taking care to prevent the action of the purulent discharge on the membrane of the palate by gargles and injections, and preventing the premature closure of the wound by the introduction of dry lint. In about two months the patient went to the country, in very good health and with no farther disfigurement or inconvenience than the loss of the incisores—a loss essential to the cure of such a case.

In dilating and keeping open the external wound, other firmer substances than lint will sometimes be required; a piece of prepared sponge will, in such cases, be preferable to the forcible introduction of lint.

CASE IV.—A lady suffered from alveolar inflammation, terminating in abscess on the right side of the palate. When it had subsided, she resolutely refused to have the offending tooth, the first molar, removed. The attack recurred several times, and a fistula resulted which, from time to time, discharged an acrid fetid humor. At the end of two years the palatine arch became inflamed and exceedingly painful. Depletion, diet, cataplasms, &c. were useless; the hard and soft palate, uvula and tonsils inflamed, so that the patient could scarcely swallow; and the first molar was elongated and loosened. This I at

once removed, and sounded the fistulous canal. It extended the entire length of the hard palate, and throughout its course the bone was denuded, rough and in parts destroyed. I laid open this fistula, hastened the separation of the necrosed fragments by mercurial water, applied dry lint to the bottom of the wound and kept its lips from closing by the insertion of prepared sponge, till the sequestra of bone should come away. In three weeks the wound assumed the character of a simple fissure, and I left its cure to nature.

In case of cutaneous or other external diseases, when they suddenly disappear, spontaneously, or in consequence of treatment, we naturally suspect that some part of the morbid humor has struck inward and vitiated the fluids of the body. And if immediately or soon after, parts previously healthy assume diseased action, we ascribe it to this vitiation, though we cannot foretell to what part the metastasis of any suppressed disease shall direct itself—the palate is not exempt from the effects of such revulsion.

CASE V.—Mad. * * * had an erysipelatous affection of the nose and lips which spread to the palate and caused an abscess, that opened of itself and remained fistulous. The ulcer, which supervened, gradually enlarged, its edges became inverted and in its centre was a fungus the size of a cherry. As these things progressed, her surgeon gave her over to my care. I removed the fungus with the end of my finger, and found the bone below necrosed, and nearly detached. I removed, with a small elevator the sequestrum, which was the size of the nail of the ring finger. The membrane above was entire. I applied dry dressings of lint, ordered detergent and healing gargles, and in a short time dismissed the patient.

From these and many similar cases which I have met with, it is clear that necrosis of the palate may exist independently of the slightest venereal taint; and that the free discharge of matter, liberty for exfoliation, and simple dressings are sufficient for a cure. The character of ulcers merits, as I have before said, the surgeon's consideration, as in the following case.

CASE VI.—A surgeon sent to me a female who had been treated for abscess of the left half of the palate, which, despite all remedies, continued to maintain an ulcerated appearance, with hard, inverted, and ill looking edges. These features seemed suspicious, and she was advised to submit to a course of anti-venereal treatment. But instead of this she applied to me. I assured her that if she would permit the removal of some stumps of teeth, and the dilatation of the fistula so as to expose the carious bone, her disease would materially change its character. She consented, and in twenty-five days was perfectly cured, without any anti-venereal medicines. The inconsiderate use of caustics may be attended with lamentable results, as will be seen in

CASE VII.—In 1769, I was called by M. Petit in consultation on the case of a young married lady, who about six months previously had run a large fish-bone through the back part of the left side of the palate. The inconsiderate use of caustics had changed the simple puncture into an ulcer with edges inverted and a fungous centre. The lady and her husband were both *sans reproche*. M. Petit and myself advised the removal of the fungus and the exposure of the bone. This done, I applied styptic pledget for the arrest of hemorrhage, and the patient passed a comfortable night, free from fever. On removal of the pledget I found the palate carious, and, as it were, worm eaten. I touched it with mercurial water, and on the ninth day the sequestrum, about the size of a t'openny piece, separated; as yet, however, the nasal membrane above the opening was entire.

There was still another caries near the veil of the palate and the veil itself was fungous in places. The difficulty of using the knife on so movable a part induced me to try caustic, which I did very carefully. The opening which resulted admitted the passage of food into the nose; this I prevented by a gold plate applied to the part, and attached by clasps to the nearest teeth on either side. In a few days the slough separated, by which the wounds in the hard and soft palate were thrown into one. The dead bone in the second necrosis came away under

appropriate treatment. After an unsatisfactory trial of balsams, I had recourse, in the conclusion of my treatment to detergent gargles and dry lint, keeping down, by escharotics, the too free granulations. I met with the same success in the complete cicatrization of a very similar case in the wife of one of the royal secretaries.

CASE VIII.—[An instance of abscess, from a morbid state of a second molar, marked neither by caries or necrosis, and, by consequence, out of place here.]

CASE IX. (from Hildan.)—Laurent Toupin, aged fifteen, subject to catarrhs, had, in 1605, inflammation and ulceration of the uvula. In 1607, from imprudence in diet and neglect of some prescribed remedies, the inflammation of the throat returned, and attacked, especially, the nostrils, but gave the patient not much annoyance, and, consequently, he neglected it. In May, when he consulted me, the uvula was destroyed by ulceration, the palate and vomer much corroded, and the membrane covering either side of the vomer swollen. The patient was bled and purged, both dry and scarified cups were applied to the shoulders, and a seton over the third cervical vertebra: suitable local applications were made to the nose and palate.

Meanwhile the ulcer of the palate enlarged, and the vomer was at last entirely destroyed, leaving a space in the nostrils sufficient for some fifteen pledgets of lint. The parts were very painful, and the patient blew from the nose several very fetid fragments of bone. The ulcers were for a while stayed by the use of rectified precipitate. Consultation was had, and it was thought that the symptoms arose from an acrid catarrhal discharge, caused by some disturbed action of the brain, and we, therefore, continued the use of purgatives and sudorifics. By these means, in connection with various local applications, I succeeded in checking the malignant action, and healthy cicatrization commenced. But, being at this time called home by the death of his father, and neglecting the directions which I gave him, his disease returned in all its force, attended with a livid appearance of the alæ of the nose.

Purgings, bleedings, setons, and in fact the whole previous

treatment were repeated. The cure was a slow one. Many fragments of bone from the nose and palate were discharged, of which I have now in possession about thirty, and some of the teeth fell out. The large opening between the nose and mouth was stopped by a piece of sponge attached to a silver plate, which restored the patient's speech. At last, in 1709, he was quite recovered, and attended to his business, but had always the deformity of a flat nose.

CASE X, (from Manget.)—A lady applied to me for the cure of a large ulcer of the palate, the discharge from which corroded the mouth in different places. There was not the least appearance of syphilitic taint. I used purgatives, venesection and ammoniacal and other applications to the ulcer; a cure was thus speedily brought about.

I cannot too strongly recommend the use of sal-ammoniac and tincture of gum lac for ulcers of the mouth, whether with or without caries; they neutralize corruptive tendencies and promote exfoliation and cicatrization. In two other cases I was not equally successful. The one died of convulsions; in this case there were many holes in the palate and deep ulcers in the alveolus. The other died of suffocation and want of nourishment; all the bones of the face were so much diseased or destroyed that the patient could take scarce any food.

CASE XI, (Henricus Regius.)—A man aged thirty-two was long troubled with attacks of the nose and pharynx, which ended in erosion of the nostrils and palate. A number of small pieces of bone were discharged, till at last the nasal septum was destroyed. The result of a consultation was—that all the fluids of the body were vitiated; especially those of the head and brain, whence they had fallen upon the nose and throat, and by the acrimony and continuousness of their discharge, had caused a putrid and destructive ulceration. The cure should be threefold: first, to destroy the formation of the morbid humor, and for this purpose sudorifics in due proportion must be used; second, to arrest the local determination of this humor, and for this, setons, cuppings, &c., are requisite; third, to heal the ulcer, which is to be done by the use of proper ointments.

The patient must be dieted, exercise moderately, and avoid mental excitement.

Anti-venereal treatment would, in this case, have done more harm than good. Let us now take a few examples of caries associated with syphilis.

CASE XII, (Hildan.)—A man who had for some years been troubled with an ulceration of the palate, a sequel of syphilis, and had taken some decoction without success, applied to me for relief. After previous preparation I used mercurial frictions and gargles of plantain, betony, &c., and in a short time he was restored to health. A scale of bone separated from the palate, but it was at its thicker part, near the teeth, and was soon healed over.

CASE XIII, [from Manget, is an ordinary case of syphilis, in which the use of mercury was followed by ulcerations of the palate, pharynx and œsophagus, so painful as to prevent the use of any solid food, and by ulceration and necrosis of some of the bones of the nose. The administration of balsams, purges and various decoctions, with the local application of ammoniacal and other corrigent and detergent preparations, brought about the cure of this case, as says Manget, in six weeks.]

Wepser speaks of a venereal disease which declared itself three years after the apparent cure of a gonorrhea. In the works of Hildan, Tulpius, Scultet, &c., we may find many cases of venereal affections of the palate. Wanderviel tells of a woman who lost, from this disease, a portion of the frontal bone as large as the palm of the hand, much of the sphenoid bone, some teeth, and a small fragment of the palate bone.

CASE XIV.—In 1773, I had charge of a child, five years old, who had, for the last six months, had an ulcer upon the maxillary and palate bones. The maxillary bone was perforated by four or five holes, and a part of the palate bone so loose as to be readily moved by the tongue. This I withdrew, touched the ulcers with spirit of sal ammoniac, &c., and used proper gargles. Some exfoliation took place, and in three months the cicatrization was complete, leaving only a depression without any perforation of the palate, or fistula. Nature,

at this early age, is very active, and greatly aids the well directed efforts of the surgeon.

CASE XV.—The late M. Morand sent me a little girl, who, for the last three months, had suffered from a carious ulcer, which had perforated the left side of the palate, and attacked the alveolus and maxillary bone of that side. Many of the temporary teeth were carious; in the slight effort necessary to extract which, portions of the maxillary bone came away, leaving some irregularities of surface, which exfoliated spontaneously. Appropriate gargles and internal anti-scorbutic and anti-scurfulous remedies, as prescribed by M. Morand, established the health of this patient.

We may learn from the two last cases that nature needs no officious interference in accomplishing the separation of necrosed bone. I shall now give some special cases of fungous tumors of the palate.

CASE XVI, (Ruysch.)—An individual complained of the inconvenience of a fungous excrescence at the side and back part of the palate. I proposed, as the only relief, the knife, followed by cautery, and with the patient's consent, prepared for the operation, by placing him in proper position, and arranging suitably shaped cauteries. We extracted such molar teeth as stood in our way, and then placed a bit of wood between the jaws, to prevent their closure during the operation. With a sharp curved bistoury, one of the surgeons removed the entire tumor, and then, while the other surgeon protected the tongue, &c., by a broad spatula, and by lint dipped in cold water, the other cauterised the wound with hot irons. We prescribed barley-water drinks to relieve the burning pain in the mouth.

On the next day, the inflammation caused by the operation greatly altered the appearance of things. This, however, was speedily reduced, and we directed our care to the separation of the eschar. The wound assumed a healthy appearance, and we had hope of a radical cure; but shortly a second fungus appeared, giving rise to a suspicion that we had left a remnant of the previous disease. The cautery was again used, and was

followed by like inflammation; but it yielded to our remedies, the patient recovered perfectly, and for many years enjoyed excellent health.

CASE XVII, (Scutell.)—From the socket of an incisor, in a young girl, in the year 1641, grew a bleeding fungus, which impeded articulation, and to which a certain barber had applied some useless remedies. After proper preparatory treatment, I reduced the volume of the tumor by compound spirit of vitriol, and then excised it with the knife, as I would a polypus. In ten days the cure was complete. The occurrence of this bleeding fungus was marked by the complete cessation of severe pain and deafness in one ear, of some two years' standing.

CASE XVIII, (Varner.)—In 1747, a man, aged forty, was received into the hospital, (London,) with a tumor of seven years' growth, covering the entire palate, and so large that he could take no solid food. Excision was the only possible alternative in such a case, and, notwithstanding the danger of hemorrhage, I decided upon its attempt. I placed the patient in convenient position, and put a bit of wood between the teeth of the left side. Then, with an instrument shaped much as a pruning knife, I cut, from behind forwards, through the base of the tumor. The first hemorrhage was slight and easily arrested; but after a few hours some large vessel opened and bled copiously; I could stop it only by the cautery. In three weeks the patient was perfectly cured.

Mr. Varner reproaches English surgeons with their infrequent use of cautery for the arrest of hemorrhages. But, though we commend its success in the case reported by Mr. Varner, why should it be preferred where means less irritating, painful and repelling might succeed? May we not also thus avoid the chance of secondary hemorrhage, which sometimes occurs upon the separation of the eschar? [In point of efficacy the cautery has no superior, and whenever such secondary hemorrhage follows this *dernier resort* of surgery, it is usually in those "hemorrhagic diatheses" where, though art has rendered the utmost of her feeble aid, nature fails to second or respond to it.] Ligation in such cases is of course impracticable, but compression

may be of service: in proof of which, I shall give two out of very many cases that I might adduce.

CASE XIX. (Anselin.)—An excrescence of the palate which had been neglected for fifteen years, became at last so large as to give great pain and difficulty in speaking and eating, and decided the patient to submit to its removal. M. Anselin performed the operation with a double-edged scalpel rounded at its point, commencing by a semi-circular incision which included the greater part of the circumference, and continuing the dissection till its entire cyst was removed. An apparatus of M. Anselin's contrivance aided very much in the arrest of the hemorrhage, which was considerable, by its upward compression against the palate. There was no secondary bleeding, and after the exfoliation of several fragments of bone from the maxilla and palate, the cure progressed, and in seven weeks the cicatrix was complete, without the recurrence of any new excrescences. This tumor was as large as a hen's egg.

CASE XX.—In 1752, M. Guyard was sent for to see a woman, aged 40, who had a cancerous tumor of the palate, which had commenced nine years before, by a small tubercle as large as a bean, at the base of the incisor teeth. Within the last two years it had increased so as to throw the two incisor teeth upward and outward, elevate the lip till it closed up the nostrils, fill the mouth and project beyond it to the size of one's fist, rendering it almost impossible to eat, drink or breathe. The tumor was dark, livid, and pierced with many excavations, from which flowed an offensive pus, and sometimes blood. Its base had the firmness of cartilage, and adhered to the palate. M. Guyard proposed the removal of this immense mass, and with the assistance of his brother, and son, the one a pupil and the other a graduate in surgery, performed the operation in the following manner.

With a straight bistoury in his right hand he began his incision at the base of the two inverted incisores; after being twice obliged to stop from the strangulation caused by the blood, which flowed very copiously, he succeeded the third time in the complete removal of the tumor, and found it to weigh nine

ounces. He allowed the surface of the wound to bleed for a while, and the patient to reject the blood which she had swallowed, and then applied a large compress of lint soaked in a styptic solution, for about fifteen minutes. No hemorrhage followed, and after the extraction of the inverted teeth, which irritated the lip, the cure was completed without any untoward circumstance, in eight days.

The plate designed by Anselin is admirably adapted to all cases and positions, whether the teeth be present or absent, and makes firm and exact compression. The case of Guyard's could scarcely have healed so readily had it been of a cancerous nature; we should rather suppose it to partake of the character of epulis.

CASE XXI. (Felix Plater.)—A merchant had excoriation of the pharynx, destructive ulceration of the uvula, and, some years after, pustules on the palate, which advanced to the state of firm ulcers and extended also into the nostrils. A tumor in the left nostril caused the eye of that side to become hard and swollen, and on the upper lip was a similar, wart-like tumor concealed by the moustache. There was here strong suspicion of a cancerous diathesis: and, in fact, the case terminated fatally, resisting every remedy.

The extirpation of cancerous tumors is, as M. Verduc correctly asserts, followed by death or the return of the disease in ten out of every twenty cases. Notwithstanding all that the most learned authors have written on this subject, we must for want of any more certain means of cure, return to plans the inutility of which has been over and again demonstrated. The cure of simple tumors and enlargements of the mammary gland, falsely called cancers, gives no ground of assurance for the permanent relief of malignant disease of the lips, gums, &c., and those who hold out such promises do but allure and deceive a too confiding public.

We meet with bloody tumors of the palate, arising often from a varicose and hemorrhagic disposition of the vessels in scorbutic constitutions, or in those of an active sanguine temperament. Of this class are the following cases.

CASE XXII. (Meeckren.)—A lady had, after a tedious illness, attended by much pain in the head, ear and teeth, a whitish tumor, the size of a nut, on the border of the palate. Under the impression that it contained pus, a Portuguese physician and myself concluded to lance it; but instead of pus it discharged a large quantity of bright red blood, which we had to arrest by placing the finger over the incision. In six or seven days it again enlarged, gave more unequivocal signs of purulent collection, and we again lanced it; but the blood gushed out again so impetuously that we were obliged to apply cauterization. After this double failure we resorted to such gargles as we thought calculated to convert the blood into pus. The tumor daily decreased, and after some exfoliation of necrosed bone, the part assumed its normal condition.

This unexpected cure led us to inquire into the source of the blood. Possibly it might have come from the artery which passes through the posterior palatine foramen. Since this case, I have met with two others very similar. The following bears much analogy to this of Meeckren.

CASE XXIII.—An individual had a tumor of the palate, opening by a fistula above the lateral incisor, which tooth was the real cause of the disease. As the patient would not suffer the extraction of this tooth, her surgeon had lanced the tumor, supposing it to contain purulent matter, but there was a copious effusion of pure blood. The fistula for a while ceased its discharge, but the incision closed, the tumor reappeared, again the patient refused her consent to the extraction of the tooth, and again the lancet was used with the same result as at first. In the latter instance I had advised the trial of compression, but my opinion was not acted upon. Being now, by the absence of the other surgeon, left in sole charge of the case, I consulted with M. Moreau. My plan was to use the cautery; but M. Moreau, fearful of secondary hemorrhage after the separation of the eschar, advised compression by means of a plate, which he suggested for the occasion. The hemorrhage ceased, the wound cicatrized, and the fistulous opening was closed up.

The effect of a scorbutic vitiation of the blood in causing hemorrhage of the palate may be seen in the following case.

CASE XXIV.—A lady of fifty had, among other symptoms of this critical period, a suppuration of the gums and alveoli around the canine, and second incisor teeth of the right side. I cured the ulcer which was between them, but could not save the teeth themselves. Shortly after a small, hard and inflammatory tumor appeared behind and between the central incisors. I softened it by emollient gargles, opened it and discharged a small quantity of pus, and cured this second accident by detergent gargles. After a time, the patient unexpectedly found her mouth full of blood, which she arrested, temporarily, with vinegar and water, and thus she passed seven hours, alternately spitting blood, and using the dilute vinegar. On my arrival to this case, I found the hemorrhage to proceed from a small branch of the anterior palatine artery near the incisors, and succeeded, with a compress, effectually in arresting it, after in vain trying styptics, pressure of the finger, &c.

From these cases we may see that compression, where practicable, is decidedly preferable to the cautery. We should scarcely believe, but for the instances on record, what freaks nature sometimes plays in the suppression of periodical evacuations: the following is given in illustration.

CASE XXV. (Scullet.)—In 1726, M. Cronbur, complained of severe periodical pain in one of his teeth, and had also a very annoying hard *sinus* upon the palate—the result, it would seem, of suppressed hemorrhoids. My first care was the restoration of the hemorrhoidal discharge, by bleeding, purging, leeches to the anus and an issue in the left thigh. For the relief of the local pain I applied a red hot scalpel to the palatine sinus, and extracted the diseased tooth, with a view to gain access to the interior of said sinus through its socket. In failure of this, I recommended to his physician the introduction of a very hot pair of small nippers, through a canula or sheath, into the socket of the tooth, and also into the cavity of the sinus. A decided impression was thus made on the bone, and after the separation of the eschar, the carious bone was brought fully to view. With the aid of the cautery, the necessary exfoliations were brought about, the parts healed under the use

of suitable local and general remedies, and the patient enjoyed his accustomed health, keeping, however, the issue in the thigh.

Besides these diseases of the palate, we have instances of sundry anomalous affections. For instance, Kruger tells of a countryman who had an abscess of the palate interfering much with deglutition, which broke on the occasion of some violent exercise, and discharged a stone of considerable size, compact and ash-colored. Bartolin mentions a similar case of a Danish lady, who had an abscess of the left maxillary bone which discharged a stone the size of a small nut.

In conclusion of diseases of the palate proper, we shall notice the accidental and congenital openings and fissures of the palate; also the means of keeping obturators in position, that they may not fall down at night, of which accident Tulpius mentions an instance that resulted fatally, by causing strangulation.

§ 5.—*Congenital Defects of the Palate, and Hare-lip.*

[This section is a concise abridgement of a discussion, published in the Journal of Medicine for the year 1773, between M. Jourdain and M. Levrette, upon—first, the cause of congenital hare-lip and fissure of the palate; secondly, the effect of hare-lip in the suckling of infants; thirdly, the remedy for these deformities, and the advantage of the bandages of M. Quesnay in the treatment of that defect of the palate vulgarly called *gueule de brochet*, (pike-mouth.)

Under the first head, Jourdain assigns, as a probable cause of congenital fissure of the palate, and hare-lip, a contracted state of the uterus or some mal-position of the fetus, whereby, the head being thrown closer to the knees, the fist is made to press against the maxillary arch below the nose, and thus interrupt the circulating fluids in their process of the formation of tissues. He urges the thickened condition of a hare-lip, as evidence of this interruption and stagnation of the nutritive fluids, and thinks, moreover, that this pressure upon the centre of the maxillary arch, by causing a lateral divergence of its

extremities, will explain the general fact that palatine fissures widen from before backward. The discussion between Levrette and the author relates mostly to the change in position of the fetus in the latter stage of pregnancy. M. L. thinks that the greater relative quantity of the amniotic fluid prevents any injurious action of the uterus upon the fetus in the early months; in answer to which, M. J. asserts that it will prevent injury from sudden shocks, &c., but does not interfere with the possibility of a continued compression, which is the point for which he argues; and, moreover, as this defect occurs in the first months of fetal life, the changes in position which take place in the latter months do not affect the question.

The explanation of Jourdain is purely hypothetical, as, in fact, must be every attempt to account for the origin of this deformity. We may clothe our ignorance in scientific language, and speak of an "arrest of development," and a "want of union between the two halves of the face," but in this we evidently do no more than state a fact, without its explanation. If, in those cases where fissure of the palate and lip is associated with projection of either half of the maxillary arch, we argue the agency of unequal pressure caused by some position of the fetus, we do not thereby prove that the pressure itself is the immediate cause of the fissure, but only that, in consequence of said fissure, this pressure is capable of acting unequally upon the two sides of the face. We may here observe, that the space in hare-lip is not from any deficiency of substance in the lip, as many seem to imagine, but is the direct result of the action of the orbicularis muscle; consequently, by overcoming the action of this muscle by compression, we bring the parts into ready apposition, and may safely take sufficient from either side with the knife, to procure a perfectly straight fresh surface for union.

Upon the second and third questions, Jourdain contends, in opposition to Levrette, that the lip is not so important an agent in the act of sucking, as that its fissure shall cause serious embarrassment. Palatine fissure, he says, is a much greater hindrance, and requires remedy. This is by some supplied with

a piece of sponge, having strings attached, which pass through the nostrils, and are attached to the side of the head; but he would prefer a gold plate, fitting accurately to the part, with its edges projecting over the lips of the fissure, and having a wire fastened to its upper side, and passing through the nose, for the securing of the plate. In default of any appliance, it becomes necessary to give the infant a farinaceous diet of some consistence.

Jourdain's remark upon hare-lip is an error. Complete closure of the mouth is essential to the proper performance of the process of sucking; and a deep cleft in the lip may as effectually prevent the closure of the external opening of the mouth, as a fissure of the hard or soft palate may prevent the closure of its nasal communication.

In the treatment of palatine fissure, Jourdain thinks the compressing bandage of Quesnay both complicated and insufficient. He denies the assertion of Levrette, that "the cure of hare-lip will ordinarily be followed by a gradual, unassisted obliteration of the palatine defect," because the two parts have no such intimate relation. He then suggests, as the best means which he has ever tried, the attachment of a silk thread—in preference to a gold wire, the ends of which may wound the tongue, while the wire itself causes more irritation to the teeth—to the molar teeth, by the gradual tightening of which the two halves of the palate may be made to approach.

Any ingenious dentist of the present day will readily contrive an apparatus, which will, with more convenience and elegance, answer the end here designed by Jourdain. Those congenital fissures which we meet with in young infants, often entirely disappear as the child advances in years, and that, too, perhaps, independently of any connection with the cure of the hare-lip, as assigned by Levrette. Where the deformity is so extensive as to resist the effect of time, it may be remedied, in the soft palate, by the operation of staphyloraphy—an operation which has of late attracted much notice, and for the performance of which many ingenious contrivances have been invented. We question if any apparatus can be found better adapted for

this purpose, than the one invented by Dr. S. P. Hullihen, of Wheeling, Va. If the fissure extend through the hard palate, and the mucous membrane cannot be brought to close over the bone, an artificial obturator becomes necessary. The same expedient must be adopted in cases of perforation of the palatine arch, resulting from disease or accident. A description of the various forms of obturators, their manufacture and adaptation, belongs to works on mechanical dentistry. Cases in which the soft palate is wanting, afford room for the exercise of much ingenuity and delicacy of contrivance. We once saw a very ingenious apparatus of this kind, the invention of Dr. Hullihen; but the limits of the present work forbid our entering into any detail upon this interesting branch of dental mechanism.

In connection with the bandage of Quesnay, Jourdain makes a very brief mention of the cure of hare-lip. In fact, he does not even mention the cutting and adaptation of the edges of the fissure, previous to the use of the bandage, though of course he must imply the performance of this preparatory step. The earliest age possible previously to the irritation of first dentition is the best for the performance of the operation for hare-lip; though many defer it till the child is two years of age, for fear of the convulsions which may be induced at an earlier period. We should bear in mind that the older the child is, the more unmanageable it becomes, and the more keenly alive to the pain of the operation. The knife is preferable to scissors, because it does not bruise the edge of the cut, and leaves a smooth incision, easily adapted. A piece of thick pasteboard or wood is first placed under the lip, and the edge then pared off on either side by a single straight sweep of the knife, from above downward, avoiding the error of those who from timidity do not remove sufficient of the angle of the fissure, and thereby fail to gain an accurate adaptation. The edges are now to be brought together, and retained in position by one of four ways—twisted suture, interrupted suture, adhesive strips or bandage. The last is scarcely sufficient of itself, or even when associated with the adhesive strips; the chief difficulty being a want of close adaptation of the inner edges of the wound.

This is attained by suture. If the twisted suture is used, one, or at most two, only are necessary, and much care must be taken that they be introduced at precisely opposite points in each half of the lip, that they be carried two-thirds the depth of the lip, and that, after the thread is wrapped around them, they be cut off as closely as is prudent, so as not to catch in any article of clothing, and thus be torn out. This accident is of such frequent occurrence, that many distinguished surgeons, among whom we may mention the names of Valentine Mott and Sir Astley Cooper, have substituted the use of the interrupted suture. This, if carried to the same depth as the twisted suture, will doubtless be found equally effective, especially if aided by adhesive strips and a simple roller bandage. In the application of this roller, the lip is to be compressed on either side towards the median line by the fingers of an assistant; thus the action of the muscle is counteracted, and since there is, as before remarked, no loss of substance, there will be very slight tendency in the lips of the wound to separate. Various instruments have been devised for this simple operation, but in our opinion there is no better one than the knife in the hands of a skilful surgeon. Skill finds, at all times, a poor substitute in complexity of mechanism.]



CHAPTER TWENTY-THIRD.

DISEASES OF THE SOFT PALATE, UVULA AND PHARYNX.

§ 1.—*Ulcers of the Pharynx.*

ALTHOUGH diseases of the pharynx, soft palate and uvula are often associated with those of the palate, yet, as they sometimes occur separately, I have thought it more in keeping with the plan of my work to assign to them a separate chapter. These diseases may arise from some morbid diathesis, or may be the result of local and external causes, and these parts become the seat of abscess, ulcer, fistula, and scirrhus, cancerous or carcinomatous tumors.

The surgeons of antiquity regarded operations upon these parts as a great stumbling-block in their art. The difficulty of introducing instruments; the fear of hemorrhage, which it would be almost impossible to arrest by compression, cautery or styptics; lastly, the impracticability of maintaining any dressings—were all circumstances which rendered operations here more unavailing than in other parts of the body. We therefore find some of the most distinguished authors of antiquity silent on the subject of these diseases; or if they mention them at all, it is evidently with the sole purpose of giving to their works an appearance of completeness.

Vinque, after alluding to the liability of a suppression of perspiration of the head to cause inflammation of the tonsils and uvula, and the peculiar difficulties attending these complaints, says, “after much reflection upon this subject, I think I have found a means of correcting, preventing and effectually curing these diseases; I shall select two out of many cases in which I have been successful.”

CASE I, (Vingue.)—A lad of sixteen was seized with an inflammatory swelling of the uvula and tonsils, which almost deprived him of speech, prevented his swallowing even fluids, except in very small quantities, and, in fact, had well nigh proved fatal. I used purgative medicines on the first day, and during the eight succeeding days, conjoined with these, sudorific decoctions. This regimen was observed for six weeks—during which time I ordered a moderate diet, excluding all acid or acrid substances—and ended in a perfect cure.

CASE II. (Vingue.)—A baker, aged forty-five, affected as above, after unsuccessfully trying others, applied to me; I used the same treatment as in the above case, proportioning the doses to the increased age of this patient. Symptoms of coma arose, which yielded to my treatment; there remained only one ulceration of the tonsils, and this I at last overcome by continuing the diaphoretic decoction and an appropriate regimen.

These cases partake of the character of angina, [quinsy, or inflammatory sore throat] a disease which in the hands of the inexperienced and empirical may have a fatal issue. Depletives, venesection, diaphoretics, a mild and moist diet, and, in general terms, such measures as shall subdue the inflammation, and excite cutaneous action, form the proper treatment in such cases. If not promptly relieved it may take on a gangrenous character [or cause death by suffocation.]

CASE III. (Wepser.)—An officer, aged fifty, tall, of good complexion, fleshy, and temperate, had, in 1690, small ulcers on both sides of the mouth and pharynx, which the army surgeon neglected. In the fall these ulcerations impeded deglutition so much that he was forced to live on drinks, and became weak and emaciated. Sept. 14th, I examined this man's mouth and saw a large foul ulcer, and besides that two others resembling two almonds. The saliva flowed very freely, and on every attempt to swallow liquids, a violent suffocative cough was excited, by which a large quantity of thick viscid phlegm was always discharged. I tried internal remedies in this case to no purpose; but by the use of injections, gargles and liniments for ten days I improved the condition of the throat greatly, and

in five days more effected a complete cure. This case shows the importance of local remedies.

Willisius gives the case of an infant seized with fever, whose throat was covered with apthæ, and a whitish mucilage; a post mortem showed the lungs parched, dry, and covered with a similar mucilage. Upon the progress of these apthæ, Silvius remarks, "Apthæ are small ulcers which covers all parts of the mucous membrane of the mouth. At first small and scattered, they afterwards run into one another so as sometimes to make one large ulcer. Whilst ordinary ulcers are covered with pus, the surface of these apthæ is coated with a white, yellowish, or black crust, dependent, perhaps on a glutinous condition of the saliva, and deserving of notice as affording a useful guide in our prognosis. When white, easily separated, and occurring close together, the indication is unfavorable: but if yellowish or dark, tenacious and scattered, it becomes very unfavorable.

"I attribute these apthæ to an acid or even acrid state of the stomach and small intestines. In proof of this we have—first, the increase of acidity preceding these affections; secondly, the acid eructations and evacuations of these infants; thirdly, the benefit derived from anti-acid remedies. The different appearances of these apthæ is owing to the varying states of this acid and of the other biliary, pituitary and salivary fluids. If this volatile acid be scant in quantity the apthæ will be few, superficial, soon matured and easily cured; but if the humors be of a more glutinous nature the apthæ will assume a corresponding character."

The wisdom of these remarks is sufficient apology for their insertion. What this author says of apthæ in children at the breast will apply to those occurring in children who are teething and in adults; though in the latter they are usually more temporary, being less complicated with any internal disorder contracted from the parents or nurse. An application of the decoction of barley with honey, will generally relieve the pain, and in obstinate cases, spirit of vitriol or the colyrium of Lanfranc may be used, but with great caution, especially in young infants.

[In the apthæ of infants, which is the only idiopathic form of this disease, attention must first be paid to a regulation of the *prima viæ*. As for local applications, sage tea, infusion of roses, or in obstinate cases, penciling with a weak solution of nitrate of silver, will be useful: but for all ordinary cases no better local applicant can be found than the common nursery formula of borax and honey.]

The apthæ of adults is a strictly symptomatic affection, and, of course merits secondary attention, our first care being directed to the disease with which it is connected. In hectic, typhoid, remittent, and other fevers where there is great constitutional irritation and prostration, the appearance of apthæ is a most unfavorable symptom, more because indicative of this general exhaustion, than from any inherent injurious effect; this is especially true if successive crops of incrustations appear and fall off, each assuming a darker or more brownish hue; we may, in such cases, predict, almost with certainty, a fatal issue. For the correction of the fetor often arising from apthæ, which take on a sloughing character, a gargle of tincture of myrrh and chlorinated soda, often repeated, will be found to have a powerful antiseptic effect; this must be conjoined with a tonic constitutional treatment, such as bark, port wine, &c.]

§ 2.—*Abscess of the Pharynx.*

It is not always in our power to subdue inflammations of the throat and tonsils; they may, in such case, instead of terminating by resolution, pass into suppuration and form abscesses, which either burst spontaneously or require the lancet of the surgeon. I shall give some examples in illustration of the best mode of treatment.

CASE I, (Wenderviel.)—The lady superior of the Hospital of Scheveringan, delicate and of sanguine temperament, had a violent attack of neuralgia, with inflammation of the throat, attended by a tumor called *finanche*.* In spite of bleeding and

* A form of quinsy, with inflammation and swelling of the muscles of the pharynx.

other remedies, the muscles of the pharynx continued in such a state that she could swallow neither solid or liquid food, and almost lost her voice. On the ninth day, however, a crisis occurred, by the bursting of a tumor on one side of the throat, and on the next day another opened itself. After a time she quite recovered.

When these abscesses do not break of themselves, they should be cut with an instrument specially adapted to such purpose, called a pharyngotome. [This simple operation, called by the author pharyngotomy, is entirely distinct from the difficult and often dangerous one of œsophagotomy, sometimes performed for the removal of foreign substances from the œsophagus.] When this instrument will not reach the abscess, the surgeon must adopt some other expedient, as in the following case.

CASE II, (Anmide Beneventus.)—Nicholas Rota was attacked with quinsy, without apparent redness or swelling of the pharynx, yet his respiration was difficult, and deglutition impossible, so that he wasted away, and his physician despaired of giving any relief. I was called to the case, notwithstanding my youth; finding that every customary means had been used, I decided to make a deep incision below the jaw, in the upper part of the neck. Much matter was discharged, great relief given, and a cure speedily accomplished.

These diseases, as I have said, partake of the nature of quinsy, and are almost invariably marked by difficult breathing and painful deglutition. When the suppurative crisis is delayed, the patient may perish from suffocation, starvation or else from the occurrence of gangrene. In such cases we are called upon to support life, either by the artificial introduction of food through the œsophagus, or, in the event of the complete closure of this tube, by nourishing clysters, as recommended by Galien and Hippocrates: the latter gives an instance in which life was thus prolonged nine days, until the removal of the obstruction. Clysters, however, are not so certain in those who are delicate or much reduced as in such as have lost none of their natural strength.

Cappivaccius and also Tulpius suggest that where the œsophagus is not entirely closed, a tube attached to a bladder containing some fluid nutriment, may be successfully used. M. de Beauve has proposed, as an improvement upon this plan of the ancients, that a syringe with a long curved silver canula be substituted for the bladder and tube. If the stricture will admit of the introduction of this instrument, and care be taken not to wound or bruise the parts, it may be found very useful, particularly in paralysis of the muscles of the pharynx.

[Stricture of the œsophagus, at all times distressing from the attendant dysphagia and sometimes dyspnœa, if dependent upon spasmodic action of the muscles, must be met by constitutional treatment, as must also the dysphagia from paralysis of the same muscles. When the obstruction is caused by enlarged tonsils, lymphatic glands, or other tumors, these must, if possible, be reduced. The stricture from malignant tumors, thickening of the tunics of the œsophagus, or cicatrization of old sores or wounds, are among the more hopeless cases. Modern surgery is provided with flexible tubes for the introduction of aliment, and bougies or ivory ball probangs, by the persevering use of which some permanent strictures may be enlarged. The rule to be observed in the introduction of all instruments into the œsophagus, is to avoid the epiglottis, by carrying the tube, probe or bougie at once to the back of the pharynx, and pressing it, in its downward passage, against the spinal column.

When a foreign body becomes fixed in the œsophagus, so low down as to be inaccessible through the mouth, the operation of pharyngotomy or œsophagotomy becomes necessary, *provided* the position of the foreign substance can be ascertained by some external prominence; under any other conditions, the operation is very hazardous, and likely to prove unsuccessful. For the relief of the suffocation frequent in such cases, the operation of bronchotomy may become necessary; immediate death is thus averted, and time given for the foreign body to change its position.]

Inflamed tonsils may, from bad treatment, neglect or constitutional tendency, become scirrhus, cancerous or carcinoma-

tous. If simply scirrhus, extirpation may prove successful, but the excision should be done, in many cases promptly, if we would avoid the suffocation which the unnatural enlargement of these glands sometimes causes. The memoir of M. Lecat upon this operation is deserving of careful perusal. A reflecting and admirable operator, he yet has the candor to confess his failures, showing that he holds self-interest subordinate to the honor and advancement of his art.

[Bichat and Desault contrived instruments to facilitate the removal of the tonsils, but most English surgeons prefer the simple bistoury and tenaculum. Simplicity, both in number and form of surgical instruments, is certainly desirable, and in the hands of an experienced operator the bistoury can be made to answer every purpose of the most ingenious apparatus. The involuntary spasm of the adjacent parts tends not a little to add to the difficulties attendant upon this simple surgical operation, and has excited the inventive genius of our country to the contrivance of a number of instruments whereby the timid and unpracticed may be able with confidence to attempt the excision of enlarged tonsils. For their enumeration and description we must beg to refer to our surgical works and journals. Ligature has been much used in the removal of tonsils, but it is more tedious and painful. For the relief of the suffocation sometimes occurring, free scarification of the tonsils will be found useful.]

§ 3.—*Scirrhus, Cancer and Carcinoma of the Pharynx.*

The following cases will show the hopeless character of scirrhus, when it has degenerated into cancer or carcinoma; yet there are those who do not hesitate confidently to promise a cure.

CASE I, (Blancard.)—A female had a large broad tumor, which adhered strongly to the trachea, just below the pharynx, caused great dyspnœa, prevented the passage of even liquids into the stomach, and occasioned extreme emaciation and finally death. Post mortem examination revealed a leaden cancerous

looking tumor, sending out its fibres on all sides, and closing up the œsophagus so that the head of a large pin could scarcely be made to pass. Several small glands on the side of the trachea were also affected with cancer. These glands sometimes become prodigiously swollen, to the great embarrassment of the parts adjacent.

CASE II.—An ecclesiastic near Paris applied to me for a cancerous ulcer of the right tonsil, which involved the pharynx and œsophagus on that side. MM. Petit and Moreau recommended, in consultation, a palliative treatment. I have since heard that the disease proved fatal.

CASE III, (Hildan.)—I visited often a woman at Cologne, aged forty, who for some years had been afflicted with a malignant ulcer of the throat, which had destroyed the tonsils, uvula, a portion of the palate, epiglottis and part of the pharynx, almost destroying the power of speech, and rendering deglutition extremely difficult. A singular feature of this case was the patient's constant longing for salted fish, unripe fruits, and other hard, indigestible substances, which she swallowed without apparent difficulty; whilst nourishing broths, &c., could scarcely be swallowed at all, and invariably caused nausea and sometimes febrile excitement. We may perhaps learn from this that, in some cases, patients can with impunity be allowed to indulge strange tastes, and, on the other hand, are rendered feverish from denial.

Hildan does not relate the issue of this case. I met a somewhat similar case, in which the patient had, for about five months, an insatiable desire for vinegar, lemons and cheese *à la passè*. After death, an ulceration of the pharynx was found, so deep as to expose the bodies of the cervical vertebræ; the uvula and veil of the palate were entirely destroyed.

§ 4.—*Diseases of the Uvula and Soft Palate.*

The uvula is subject to inflammation, ulceration, abscess and malignant disease. It may elongate so as to impede speech, breathing and swallowing. Its diseases may be of

general or of local origin. The following are cases of disease of the uvula.

CASE I.—A young man suffered from an enlarged uvula, for which he had unavailingly taken a great number and variety of empirical remedies. It at last increased so as greatly to hinder respiration. In 1598, he came to Lauzane, and I was called, in consultation with a distinguished physician. The uvula extended the whole length of the palate, and adhered to it, advanced forward nearly to the front teeth, was hard, livid, irregular, painful and marked with livid veins. We could only commit the case to providence, unwilling as we were to incur the charge of ignorance by attempting so desperate a cure, and after recommending a system of diet we sent him home. Shortly after he died under the hands of a quack.

CASE II.—A lady having wounded the extremity of the uvula, used vinegar to stop the bleeding. Inflammation and suppuration resulted; the abscess was lanced and gargles used; still the uvula did not heal, perhaps from the irritation of the food, and caustic was applied. This, so successful in other positions, served only to irritate the more; spite of all precautions a fungus appeared, which grew to the size of a filbert. The lady opposed her surgeon's wish to cut it off, from a dread of unmanageable hemorrhage, and came to Paris and applied to me. My first proposition of actual cautery was equally repugnant; I therefore resolved to try the ligature. By means of a pellet of cotton, secured to a curved probe, and introduced through the nose, I pressed the uvula forward and rendered it steady. I then passed a noose of waxed thread around the neck of the tumor, securing its two ends on either side between the last molar teeth. By gradually tightening this noose, the fungus was made to slough, and in nine days dropped off. The after treatment was simple, and on the twentieth day she returned to Picardy perfectly cured. The ligature, so well adapted to such cases, will not suit in carcinomatous or malignant disease, such, for instance, as in

CASE III, (Hildan.)—In 1608 a lady of rank sent to me one of her retainers, afflicted with a large tumor of the uvula about

the size of a hen's egg, hard, livid, irregular and firmly adherent to both palate and uvula.

It closed up the posterior nares, impeded respiration and speech, and rendered the swallowing of even liquids difficult. This patient had twice had profuse epistaxis, but of late no hemorrhage had occurred from either mouth or nose. Notwithstanding the young man's entreaties I declined operating, although the tumor had not yet assumed any great malignity, and sent him home. He lived till midsummer of 1609 when a violent hemorrhage took place which proved fatal.

Hildan, Scultet and Heister have given plans for the application of ligature in such cases; but the practical difficulties are such that the knife is much preferable. Fabricius de Aquapendente recommends the use of a delicate pair of scissors in removing a diseased or elongated portion of the uvula, keeping down the tongue with the same hand that holds the scissors, and with a tenaculum in the other, seizing the part to be clipped off. The cautery, moderately heated, is then to be applied. If the uvula be shortened too much it will affect articulation.

In that extension of the uvula to which Ætius has given the name "prolongation," if it arise from simple relaxation of the parts sustaining it in position, astringent discutient gargles may suffice for its restoration; ice applied in substance, or ground pepper, may both, in different ways, prove beneficial. But if there be actual increase of substance and the uvula is red and swollen below, while its base is in its natural condition, other means become necessary. Hippocrates thinks excision in such cases not always advisable from its liability to excite suppuration, or else a hemorrhage which may prove fatal by suffocation. Albucasis, however, thinks the operation very safe except where the uvula is black or dark colored, hard and insensible; in this event the hot iron should be avoided for fear of arousing cancerous action.

When, however, the uvula becomes so long as to cause great irritation or danger of suffocation, its excision becomes necessary, avoiding, as Hallyabbus cautions us, cutting it too short, least we impair the power of articulation. Authors have sug-

gested three ways for the performance of this operation. The first, as given by Albucasis, is with a pair of blunt scissors, or curved bistoury, the mouth being turned towards a strong light, the tongue depressed with a spatula, and the uvula secured by a hook; astringent lotions form the after treatment. The second is by cautery—either potential, as given by the same author, to wit, a half hour's application of a band smeared with a mixture of quick-lime, soap and dissolved arsenic; or actual, as advised by Mesué: but cautery, either actual or potential, is too severe a measure. The third, that of Fabricius, as given above, unites the quickness of the first, without the risk from hemorrhage, and avoids the accidents which may accrue from the violence of the last. When the ligature is used we should be careful to tighten it gradually.

We meet sometimes, though rarely, with descent of the palate, where the muscles of the veil are so relaxed as to allow it to fall down and close the air passages to the eminent danger of suffocation. Tulpius gives an instance where the palate was so enlarged that the patient could not even use gargles and where the prompt use of the knife alone saved life. Helwigius gives a somewhat similar case, though this was associated with great tumefaction of the tongue. The following is a case of injury of the palate by external violence.

CASE.—I was sent for, says M. Leutaud, to see Jean Piquet, the son of a sailor of Arles, a robust youth of an active sanguine temperament, who fell with his face against a reed, the end of which passing over an upper canine tooth to the back of the mouth tore the veil of the palate so extensively from its attachments, that it, with the uvula, hung down so as to obstruct all passage of food and produce dyspnœa. The patient was bled twice that day both to arrest the local hemorrhage and reduce inflammation. I urged a consultation, and my professional brethren advised the removal of the lacerated fragment of the palate. I proposed, however, to attempt first its reunion and then in the event of failure to follow their advice. I bathed the torn palate with a vulnerary decoction, and warm wine; then carefully adjusting it to its proper position, I retained it there by

means of a delicate lead plate wrapped in fine linen and steeped in balsam of Mecca. My dressing was so well planned and so artistically applied, that in less than twenty days a perfect union took place, and the patient had as complete use of the parts as though the accident had never happened.

This cure is highly creditable to M. Leutaud ; it proves the necessity of deliberation, and the impropriety of too hasty judgment. Had the advice of the consulting surgeons been followed the patient would have remained mutilated for the rest of his days.

CHAPTER TWENTY-FOURTH.

VARIOUS SINGULAR CASES OF DISEASE OF BOTH UPPER AND LOWER JAW FROM DENTAL CARIES AND OTHER CAUSES.

DISEASE of the teeth, besides causing many of the affections mentioned in this volume, may give rise to others with which they would at first seem to have no connection, were it not that the cure, which the removal of such teeth brings about, establishes their relation. The following are cases of megrim, [hemicrania, or pain on one side of the head] ophthalmia, singular odontalgia, &c., from these causes.

CASE I. *Megrim*, (Hildan.)—A lady applied to me for a constant and excruciating pain in the left side of the head, most severe in cool damp weather. She had tried all kinds of remedies to no purpose. Four years previously, as I learned, she had suffered for six months with severe odontalgia of the left side, which left behind it a neuralgia of the head and cheek. This led me to a careful examination of the mouth where I found the deeply buried fangs of four carious teeth. She cheerfully agreed to their removal; I therefore, administered purgatives twice, applied cups to the neck and shoulders, directed a decoction every morning for four days, and on the fifth extracted the fangs. The next day I gave pills and ordered for some days a warm poultice of betony, rosemary, chamomile, marjoram, wormwood, aniseed, guaiacum, &c. bruised and digested in white wine and to be applied twice a day. The patient by these means was restored to health.

Without pronouncing upon the complex poultice, I may venture to conjecture that the essential feature of this cure was the removal of the teeth, aided by diet, purging and vesication.

CASE II. *Megrim*, (Petit.)—The late Princess of Condi gave

in charge of her physicians one of her protégés, for the cure of a megrim of five years standing. She was bled in the arm and foot twenty times, and when, after that, it was thought advisable to open the jugular vein, the Princess applied to M. Petit to perform the operation. But he, not seeing the necessity for so frequent depletion begged to examine the mouth and found in the lower jaw, in which the patient had for a long time had pain and numbness, eighteen instead of sixteen teeth and a crowded denture. By extracting the second molar, on either side he gave complete and permanent relief in twenty-four hours.

CASE III. *Ophthalmia*, (Hildan.)—A lady of Cologne had suffered long and much with an eroded carious third molar, which she would not consent to have extracted. She had frequently, by advice of her physician, used purgatives, and even cups on the shoulders. The continued irritation of the gums gave rise at last to an ophthalmia which ended in the loss of sight of the left eye.

CASE IV. *Ophthalmia*.—A young lady of seventeen had a second upper molar of the right side which was much decayed; as it gave no pain she would not suffer its removal but had it plugged. At the next menstrual period the eye of that side inflamed and the tooth would yield to upward pressure; on cessation of the menses, the ophthalmia disappeared and the tooth became firm. So at the second and third menstrual period ensuing. On this third appearance I removed the filling and the ophthalmia promptly subsided. I cauterized and refilled the tooth, a fourth time the ophthalmia returned, and again was checked by the removal of the filling. A piece of cotton kept in the tooth became daily saturated with an offensive pus. The lady at last suffered me to extract the tooth, and there was no recurrence of the symptoms. The obstruction of the purulent discharge by the plug of metal was here the sole cause of mischief.

CASE V. *Otalgia*.—A lady who had suffered for a long time from acute pain in the right ear, had tried in vain all kinds of remedies. She was not aware of any mal-condition of her teeth, but was, nevertheless, advised to have her mouth exam-

ined. She came to me, and after a very close inspection I found a deep decay on the external side of the right upper wisdom tooth. The removal of this tooth gave instantaneous relief from the otalgia.

CASE VI. *Venereal ulcer following the extraction of a tooth.*—In 1760 I removed a first molar on the right side of the lower jaw for a servant girl. The operation was simple and attended with no accident, but in a few days the girl complained of pain in the place of the extraction, which, spite of her care increased; an ill conditioned fungous ulcer formed in the socket and increased so as in eight days to involve the gum, maxilla and cheek. MM. Renard, Pibrac, and myself thought the ulcer neither scrofulous nor cancerous. At length, by force of threats from her master, she confessed that she had had about a year ago, a gonorrhea with two chancres, of which she was cured in about a month, nor had she since had any such trouble. We now regarded the ulcer as syphilitic, and the girl was sent to the Bicêtre Hospital, where, under an anti-venereal treatment, she at length recovered. Under the same circumstances, had the wound been more considerable than that caused by the extraction of a tooth, the patient might not have so easily escaped.

CASE VII. *Sphacelus.*—In the German Surgical Journal, we have a case of the occurrence of gangrene of the gums after the extraction of a tooth. The removal of the tooth can hardly be considered as the cause of the mortification, for the simplest wounds sometimes assume a gangrenous state; it was dependent rather upon a peculiar condition of the system.

CASE VIII.—Bartholin mentions the case of an ecclesiastic of Padua who had a tooth, which was much longer than the rest, broken off so as to avoid deformity, upon which he was immediately seized with fatal convulsions. The nerve was in this case exposed.

The dental nerves of the upper teeth proceed from the fifth pair, those of the lower from the third pair. Their extension within the pulp cavity forms, doubtless, that membrane described by Columbus, Fallopius and Eustachius. Meibomius contends

that the purpose of the nerve is to give firmness and permanence to the tooth. But if so, why is it that we often find the teeth of persons in advanced life with the pulp cavity almost or quite obliterated by ossification, and yet the teeth themselves articulated with greater firmness than ever?

The teeth are sensitive to the action of acid and other penetrating substances, especially upon the cutting and grinding surfaces; also to impressions from heat and cold; we see this more particularly in teeth which have been so filed as to remove the enamel and expose the tooth-bone; the momentary pain in such cases is often almost insupportable. Where, by fissure of the enamel or the breaking off of a piece of the tooth, the bone is exposed, it is frequently peculiarly sensitive. All of which seems to prove that the nerves are distributed throughout the tooth-bone and terminate at the enamel, which latter is designed as a protection against the action of substances taken into the mouth. In the case given by Bartholin, the operator was either ignorant or imprudent in cutting away so much of the tooth as to expose the pulp cavity. But, although I never knew the operation of filing to result fatally, the case should teach us caution and moderation, and the necessity of avoiding, by working at intervals, too great an amount of irritation at any one time.

I saw in 1771 a right canine tooth in a young lady of twenty-three, so worn away as to expose the commencement of the pulp cavity. I enlarged the opening, gave vent to a drop or two of dark, offensive blood, and the pains which had been very acute, ceased. I destroyed the sensibility of this tooth with cotton dipped in ether, and filled it with gold. It is still in the mouth, and gives no trouble, though it has a bluish hue.

CASE IX. *Odontalgia for Amenorrhea*, (Rayer.)—A lady of rank, long suffering from amenorrhea, was subject to frequent epistaxis, pain in the side, and swelling of the abdomen and feet. These symptoms were overcome, and for a year she enjoyed good health; but last summer, in consequence of mental distress, a severe neuralgia came on which was cured for a time, but soon returned with the following curious symptoms. Every

evening the pains recurred, preceded by the discharge from between the upper canine and bicuspid of the left side, of a matter which was at first thick, viscid and bloody, but afterwards clear and so profuse as to fill a small vessel. The pain continued the whole night. No remedies gave any relief but opiates, which suppressed both the pain and the discharge, and gave sleep.

The left eye became much swollen, yet without pain; vesication corrected this annoyance, but subsequently the sight of this eye was for a time almost entirely lost. None of the teeth appeared to be affected except one adjoining the seat of the discharge, which was loose: but its removal gave no relief. The lady, weary at last with fruitless attempts to cure her disease, returned to Vienna, where she was obliged to have recourse to anodynes every night; if omitted for a single day, the pain became insupportable.

The period of menstruation, and also the time of life when menstruation ceases, are fraught with much inconvenience, disease and peril to the female. Sexual intercourse during the menstrual flow should be avoided. Some old authors we find, who attribute cancer and polypus of the uterus, and scrofula, to such ill-timed indulgence. Suppression of the menses may arouse disease of one character or another, in this or that part of the body according to the constitutional peculiarities of the individual. Nature at these monthly periods seeks relief from some quarter, and if this come not through the natural discharge, it finds some other source, according to the peculiar diathesis or disposition of body.

CASE X. *Odontalgia and Megrim*, (Wepser.)—A nun, aged forty, was seized, at one of her menstrual periods, with a pain in the head, eyes and teeth. A tooth on the left side was extracted, but without relief; the pain passed to the right side, and for five weeks, with occasional intervals of from half a day to two days, caused much suffering, first on one side of the head, then on the other, the principal seat of the pain being a space two or three fingers broad, on the side of the head. When the attack is very violent, it is preceded by a strongly

marked chill, the throbbing of the temporal artery is very perceptible, the eye is injected, and, when the paroxysm is at its highest, flushings are experienced. For the last fortnight the seat of acutest pain had been more towards the forehead. The pains were often attended by involuntary belching and gaping; would come on usually in the evening, and last all night. At the onset of this neuralgia, a gouty swelling of the feet, which first came on in the winter, had disappeared; the menses had also ceased; otherwise the patient's health was good.

An issue was opened in each arm, and a third in the neck, all three of which discharged freely; attention was also paid to the nervous system, with a view to give it tone and strength. Not much regard was had to the amenorrhea, because at that age the menses are usually very scant. The symptoms about the head may possibly have arisen from a revulsion of the previous gouty affection; bad teeth are not essential to the possibility of such a metastasis. I have known cases like the present, where perfectly sound teeth were removed, one after another, but with no relief; in fact, this operation is rather calculated to increase the disease, by the irritation which it excites. Sometimes odontalgia gives rise to consequences more serious than simple neuralgia, as in the following case from Wepser.

CASE XI. *Odontalgia followed by Lachrymal Fistula*, (Wepser.)—A young man, aged twenty-three, of a tall, slender frame, after various imprudences in diet, exposure, &c., came to Milan and complained of severe pain in the eye-tooth, with considerable inflammation of the inner angle of the right eye. After previous bleedings and purgings, the tumor at the inner canthus was opened, but prematurely so; it afterwards matured and opened of itself in the lower eye-lid, also in the upper eye-lid, and again near the nose. M. Laport, surgeon, found these three ulcers all connecting with the larger one first named, and the bone more or less carious. He gave vent to a free discharge of fetid purulent matter, which passed also into the right nostril. The patient was now purged, cupped and blistered, with a view to correct the general vitiation of the fluids,

and divert the local disease; meanwhile the surgeon dilated the ulcerated wound and applied the cautery. On the third day he removed a small scale of bone. The three smaller ulcers were also complicated with caries, involving chiefly the outer lamina of bone, and admitting the introduction of the probe for about an inch under each lid. Further use of the cautery was so repugnant to the feelings of the young man's parents, that stimulant injections were substituted, such as were best calculated to promote exfoliation.

About this time Wepser was consulted, to know if the hot iron might be applied without danger to the eye, in place of the caustic injections, which had caused much redness of the conjunctiva, with heat and pain in the head. The patient, M. Laport stated, was not confined to the house, had no pain in the eye; the ulcers were dry, but there was tumefaction at the root of the nose and eye-brow, and a discharge from the nostril. Wepser replied, "The symptoms stated show a persistence of the caries, which, when it attacks the reticular structure of the jaw, is apt to be very stubborn; if a free discharge from the nose be not kept up, new deposits of matter will be likely to form. The cautery is an admirable cure for caries, but cannot in all cases be applied, as, for instance, where the bone is very delicate or very porous, or in contact with important and tender organs. I think that, in the present case it might be used with safety and advantage upon such parts of the maxillary bone as require it, or even of the nasal and frontal bones; but I question its propriety or benefit in cases of the os planum, os unguim, or orbital portion of the palate bone. If, however, such application were thought necessary, all injury to the eye might be avoided by the use of a canula wrapped in moistened linen, as is done in cauterizing deep seated bones of the nose, lachrymal fistulas or nasal polypi. If a new purulent collection should form, I would dilate the fistula, expose the bone, and apply cautery through a canula; if, however, the diseased part be very deeply situated, I should prefer medicated pledgets of lint. General remedies are not to be neglected, and I should advise the continuance of the seton."

In the above case we are not told whether the canine tooth was sound or not. We presume that the disease did not arise from any affection of the tooth in question; but rather that both tooth and lachrymal duct were involved in the same morbid disposition, arising from some vitiation of the fluids. Such a connection between the canine tooth and the lachrymal duct, is a matter of no surprise when we consider the great length of its fang.

CASE XII.—[A certain Barthelemi Freer dies lethargic and an autopsy reveals effusion in the left ventricle of the brain. Because while in health this man was subject to tooth-ache, for the relief of which he used tobacco, Jourdain has seen fit to insert the case here.] Bonet remarks upon the frequency with which odontalgia is caused by a “reflux of the morbid humors of the brain.” Tarenta thinks this reflux comes through the frontal and temporal veins when it attacks the face; if it follow the deeper veins it may pass to the lower parts of the body. Dr. Highmore, with more judgment, argues that the acrid humors flowing through the arteries, cause odontalgia by their action upon the exquisitely sensitive membrane of the dental pulp; and shows, after describing the manner in which the carotid artery branches under the ear, the rationale of the relief so often obtained by blisters, cups, or astringents to the back of the ear. Purgatives are also necessary for the discharge of these acrid humors from the system, and the cutaneous action in the head, where this has been checked, must be restored. Emmenagogues in cases of interrupted menstruation, aromatic poultices to the cheek, warm foot baths, &c. all demand consideration, according to the age, sex and condition of each patient.

CASES XIII, XIV and XV. **Odontalgia Vermineuse*.—The existence of insects in hard substances, says Pechelin, seems incredible; but when one has seen worms destroy and make their escape from stones, it is not altogether impossible that they may exist in some teeth. Though it is difficult to see how so soft a mouth can work its way through so hard a substance, yet that it does so is certain, for until this canal has pierced to

the central cavity of the tooth, the insect gives no painful evidence of its presence. The pain is most agonizing, nor can the concealed enemy be displaced except by removal of the tooth.

What is the origin of this parasite? Some say it is generated in the food lodged between the teeth. Others, that it is found in the mucous secretion so often collected around the necks of the teeth, in those who are not careful in cleansing the mouth; for Leuenhoeck, that exact naturalist, remarks that this secretion is full of animalcules.

Pechelin gives the case of an aged woman, of a scorbutic diathesis, who among other troubles, suffered from a violent tooth-ache. After trial of all sorts of popular and superstitious remedies, she, in her desperation, put some honey into her mouth, forcing it with her tongue into the hollow teeth, knowing well what would be its probable effect; but to her great surprise, in about an hour after, all pain ceased. Experiencing a sense of tickling on the tongue, she put her finger to her mouth and drew forth five living insects, which Pechelin states that he himself saw, and that they bore some resemblance to the lice commonly found in sheep's wool. He thinks also that he has found insects in the cerumen of the ear, but as they were not alive he could not speak with confidence. The question naturally arises, did these insects come from the carious tooth? for my own part I have no very great confidence in the existence of these worms as a cause of odontalgia.

The mucous lining of the stomach of the silk worm has been proposed as a cure for this affection. Schultz gives a case of a woman who after suffering excruciating tooth-ache for which she could find no relief, applied this remedy by means of a narrow band to the tooth. Shortly after, feeling a peculiar titillation of the gum, she removed the band on which she found a number of worms like small threads, and about an inch long, resembling very much the common ascarides. They were still alive, flesh-colored, pointed at either end and marked with rings throughout their entire length. It is difficult to explain

the action of this substance from the silk worm ; perhaps it possesses some peculiar odor attractive to the insects.

If insects or worms are really a frequent cause of tooth-ache, I should suppose that the remedies used for the relief of the pain, such as the essential oils, balsams and actual cautery, would certainly destroy them ; so that where the tooth-ache withstands these applications, it is fair to conclude that there exists some cause not so purely local, rendering the nervous pulp keenly alive to the acrid quality of the carious matter and to the action of the air.

That the partial or entire fracture of a tooth should give rise to pain, irritation, caries, &c., and make its extraction necessary, is not at all surprising but that it should be the cause of a nasal polypus as in the following case, is somewhat strange.

CASE XVI.—*Nasal Polypus from a Fractured Tooth*, (Wepser.) A young lady of twenty-three, plethoric and subject to epistaxis, but in other respects healthy, broke a carious tooth while cracking a cherry-stone, and a part of the stone, as it seemed to her, was forced down into the decayed tooth. From this time she began to feel obstruction in the left nostril, with occasional neuralgia in the left side of the face and the broken tooth. I tried in vain to cause absorption of this tumor, by pills and desiccants ; it increased through the winter, the next summer it lessened, and in the fall it again enlarged, with much attendant neuralgia and great inconvenience. Menstruation was regular and the epistaxis had ceased to recur. At the end of six months, this polypus had two heads one the size of a filbert, the other a little smaller, and exactly closed up the anterior nares. It was movable, but I could not determine the point of its attachment.

I applied the cautery, through a canula twice daily for eight days ; then as it began to separate I made daily gentle traction for five days, which caused pain in the eye-brow, ears and carious tooth. I ordered an alum injection for the nose, but this being too astringent I substituted a decoction of plantain. November 18th and 19th : while making traction on the tumor, both the patient and myself heard a considerable noise or buzz-

ing in the nose. I applied the cautery to the tooth in which the pain was felt. Nov. 20th: I seized the polypus and moved it about, when very severe pain was experienced in the left ear and a bloody discharge escaped from the nose. Nov. 21st: I seized the neck of the polypus, which was about the thickness of a quill and an inch long, and violently tore it away. On the same day I removed the body of the polypus, which at the time of the extraction of its neck could not be seen. The breathing was now free and on the 29th the patient went home entirely relieved. In about two years the lady sent me word that the polypus had returned. I advised the trial of the decoction of plantain with alum and white vitriol, and in case this did not succeed, the actual cautery. The return of nasal polypus so far from being at all strange is very common, arising perhaps from the number and position of its radical fibres.

CASE XVII. *Nasal Calculus*, (Wepser.)—An old lady of seventy had for some time a hard substance which obstructed the right nostril and gave rise to a constant discharge; it was by many supposed to be a polypus. In April, 1680, I saw this tumor together with M. Rick. On its summit was a dark, ragged and deep ulcer. We found this substance as hard as bone and having no connection with either side of the nose. With the forceps I detached a fragment looking like dark sandstone, but white at the surface of fracture; some hemorrhage resulted. The lady had an upper incisor much decayed, which we thought was the cause of all the mischief, for on moving it we perceived also motion in the nasal tumor: but she would not consent to its extraction. I therefore, again seized the tumor, moved it from side to side, and then with some effort pulled it away from its attachment; the pain was slight and the hemorrhage easily arrested. This tumor was enclosed in a membrane, was an inch long and a little thicker than the thumb, pierced by several openings the size of a bird's quill, was irregular in shape, and in color dark on its anterior and yellowish on its posterior surface.

M. Rick sent me word towards the close of April, that he had removed the remnant of this calculus together with a fleshy

excrescence and had discovered a connection existing between it and the incisor tooth above named. M. Faber tells me that he once saw a much larger calculus than this drawn from the nose of a woman. For the arrest of hemorrhage M. Rick strongly recommends hog's dung carefully dried in an oven and pulverized; I have found it very effective as a hemastatic.

CASE XVIII.—Dental caries when it excites inflammation may result in death of the dental periosteum and the spontaneous falling out of the tooth; or the maxillary bone may be involved and more serious consequences ensue. Wepser tells of a man aged fifty, who had alveolar abscess from a decayed upper tooth, which filled with matter twice a year, spring and fall, causing much pain and tumefaction of the cheek. Sometimes it filled with a fetid pus, without pain, which was easily voided by pressure of the finger. This he endured for ten years and was at last cured by the use of astringents, &c. During the continuance of this abscess, and for some time after there was a clear yellowish discharge from the nose. This last symptom in connection with the fact that this patient had suffered from the plague of 1629, seems to point to some constitutional vitiation, in connection with the local cause of this disease. We meet with dental affections in some cases of scurvy and putrid, malignant fevers where the teeth themselves are perfectly sound.

SURGICAL DISEASES

OF

THE MOUTH.

VOLUME II.

CHAPTER FIRST.

DISEASES OF THE LOWER JAW.

I SHALL not repeat here what anatomists and surgeon dentists have written on the structure, &c. of the lower jaw, but shall proceed at once to notice the treatment of the various diseases of this jaw, the gums, lips and tongue. These diseases demand our attention, equally with those of the upper jaw, possessing in point of treatment, some advantages and some difficulties. In the superior maxilla, there is a close relation with the antrum and many important organs, rendering disease here more disastrous and difficult of cure; in the inferior maxilla, on the other hand, though the number and importance of its relations are less, there is, for want of so direct an escape for purulent discharge in case of alveolar abscess, greater liability to infiltration of matter into the substance of the bone. In the treatment, therefore, of either maxilla, the surgeon will require prudence, judgment and skill.

The lower jaw is liable to all those surgical diseases, incident to the rest of the body—abscess, fistula, caries, exostosis, spina-ventosa, cancer, carcinoma, ramollissement, fracture, luxation, &c. arising from external, internal, or combined causes.

In all our treatment, nature should be carefully watched. A wise and unprejudiced management may accomplish more cures than multiplied operations. It is not enough to be a good operator; for, apart from the judgment necessary in deciding upon an operation, if a skilful after treatment be not pursued, the issue may be unfavorable. To this, perhaps, together with certain conditions of the atmosphere, imprudence of the patient, &c. may be attributed the failures which sometimes attend sur-

geons of the highest reputation. The after treatment is often by far the most important part of the surgeon's duty.

A wound may be so stopped up by pledgets and dressings, as to impede the free discharge of pus, although some assert that a wound should be thus stuffed with a view to excite suppurative inflammation. Scant suppuration is injurious, by preventing the elimination of the morbid fluids; profuse suppuration does harm, by reducing that strength which the patient will often need, during the progress of the disease. Again, if our dressings be too light, the external wound may close before the deeper seated parts have healed, and the confined purulent fluid cause ravages of a serious and sometimes fatal nature. Resort to even the most skilful surgeon is at all times painful, and if he be a conscientious man, he must reproach himself much for any unnecessary mutilation or suffering that he may cause.

Ointments and oily dressings may, by too long use, cause a soft, indolent, flabby or erysipelatous condition of a wound, give rise to proud flesh, unhealthy suppuration, or occasion an imperfect cicatrix. Therefore, while approving their employment, I would urge judgment and caution, especially in the lower jaw, which is surrounded by so many glandular structures. Caustics and desiccants, may also do much mischief; by suppressing a desirable discharge, they may cause reabsorption and metastasis; by their irritation, they may develop an incurable malignancy; by mingling with the fluids of the mouth they may cause injury.

Having dwelt sufficient at large in the first volume upon the subject of inflammation, I proceed at once to the consideration of its terminations, [or events,] as met with in the lower jaw.

§ 1.—*Abscess.*

Parulis is simply an abscess of the gum, but when the pus extends into the cellular tissue of the muscles which move the inferior maxilla, it becomes a more serious disease. The tumor, no longer confined to the gum, shows itself externally, either on the cheek, or, where there has been no obstacle to the down-

ward tendency of the pus, on the side of the neck. In lancing these purulent collections, we should, if possible, select a part not exposed to view, to avoid, first, the disfigurement of an incision in the neck, secondly, the suspicion to which such a cicatrix might give rise of the presence of a strumous diathesis where none really existed.

This point has received the attention of several zealous practitioners. M. Ruby asks "whether abscesses about the lower jaw may not be relieved by internal incision." M. Poulain in reply, urges, that in this way the inconvenience frequently resulting from the section of muscles, arteries and nerves will be avoided; but in the cases which he adduces, he does not seem fully to meet the question proposed by M. Ruby. In 1770 I devoted myself to the careful examination of this question, sought carefully the best means of avoiding the difficulties attending external incision, ascertained the cases in which internal incision was to be preferred, and succeeded, as I think, by joining my own experience to that of others, in definitely settling this question. In the works of a very distinguished surgeon, M. Petit, we found the following remarks: "Abscesses about the face where they point outwardly, should be allowed to open of themselves, least, by use of the lancet we cause disfigurement. Where the tumor is both internal and external, it is best to open it internally; we thus prevent disfigurement, avoid a tedious after treatment when there is no caries, and, by virtue of the healing properties of the saliva, secure a more speedy cure. I have frequently preferred the internal incision, although in so doing, I cut through considerable substance and the abscess was nearly matured externally; I have thus very much abridged the treatment of these cases." The following is from M. Petit's work.

CASE I.—M. de Fulvi had a lower incisor extracted, whereupon inflammation and swelling ensued, extending as far as the thyroid cartilage, and formed an abscess. The medical men in attendance decided upon a longitudinal incision from the chin to the cartilage: but being called to the case, and finding distinct fluctuation between the lip and the maxilla, I advised a

transverse incision, from the mental foramen of one side to that of the other. A large quantity of pus escaped. Prompt and permanent relief was given and the cure was very rapid.

“Dental caries,” says M. Petit, “is a frequent cause of abscess and a host of other accidents, some very serious, and apparently having no connection with the teeth. I have often by the removal of an offending tooth, cured tumors in eight or ten days, which had long resisted poultices, plasters, &c., and caused them to disappear even when almost ripe for the lancet. I have seen them sometimes so numerous as to form a sort of chain from the chin to the clavicle.” These remarks are most true; the removal of the teeth or fangs should not be deferred, nor can we otherwise hope for cure.

CASE II. *Abscess from an Injury.* (Ruby.)—A man named Loiseleur, aged twenty-four, received an injury in his mouth from a foil, which doubtless wounded the soft parts under the tongue. He concealed the true cause of his suffering and pretended to have a severe tooth-ache. At his uncle’s request I examined the young man, saw that the teeth were not affected, and learned from him the real nature of his injury. An abscess seemed to have formed among the sublingual muscles, extending from the symphysis of the jaw to its left angle, declaring itself externally by tumor and fluctuation.

To open this tumor would doubtless have been a ready and sufficient means of discharging the pus; but I preferred to make this operation a last resort. I examined the mouth very carefully, found a few drops of pus, and at last discovered, below the second molar, under the tongue, a small orifice, from which, by making external compression, I caused a large quantity of pus to escape into the mouth. Regarding this now as a sinuous abscess, I imagined that its cure might be accomplished by a compress. I therefore placed a handful of lint over the tumor, and a graduated compress over this, securing the whole by a simple bandage. In eight days I removed the bandage and compress, having meanwhile prescribed a strict regimen, and had the satisfaction of finding the abscess perfectly healed. Had any diseased teeth been the cause of the

purulent collection in this case, their removal would have been absolutely necessary to a cure.

CASE III. (Poulain.)—In May, 1765, a young man of 18 had a tumor on the right side of the lower jaw. The seat of the abscess seemed to be under the buccinator muscle. M. Marigues, after employing general remedies, prescribed poultices externally, and internally split figs boiled in milk. The tumor was thus matured, and fluctuation was perceptible both internally and externally. M. Marigues under these circumstances preferred the internal incision, which he made in the direction of the jaw, the whole length of the tumor, and gave vent to much pus. Bandages and the use of a detergent decoction aided in the speedy cure of this case.

In 1767, M. Marigues was called to a similar case, and adopted the same treatment, except that, from the patient's unwillingness to consent to an operation, the abscess discharged itself internally: the cure was equally prompt.

M. Poulain seems to think that surgeons have some other reasons for giving preference to the internal incision, than the simple disfigurement caused by the cicatrix. Certainly, an experienced operator would make the incision within or without with equal safety; it must therefore be from good reason, not from fear, that he decides upon the former. M. Fauchard has alluded to these disfigurements as an argument in favor of the internal opening.

CASE IV.—In 1764, a patient, aged 14, was sent to me, from whom, three months previously, a second lower molar had been extracted, for the cure of an alveolar abscess. The wound did not heal, and discharged an offensive matter. In spite of every care the pus involved the bone and infiltrated the tissue of the muscles of the base of the jaw. The cheek became swollen but not painful, and the axillary, parotid and submaxillary glands enlarged. The tumor was large, and marked at its most dependent part by a red spot, indicating the point at which nature sought relief. Inasmuch as the fistulous opening in the mouth was insufficient, I at first contemplated, after drawing the matter to a head, to make an external incision;

but, on examining the mouth, I found the alveolar and maxillary tissue, around the place of the extracted tooth, in a carious condition. I therefore removed the necrosed portion of bone, and by external compression sought to direct the purulent collection upwards. By graduated compresses and the bandage, with the assistance of emollient gargles, I succeeded in causing a sensible tumor between the jaw and cheek. Into this tumor I plunged my lancet, and the patient's mouth was filled with the discharge. I continued the incision in the direction of the bone, touched with mercurial water such parts of the bone as were diseased, and dressed the wound with dry soft lint. Some exfoliation took place, and in six weeks, under the use of detergent and sanative injections and gargles, I accomplished this cure, without the least external disfigurement, except a slight depression at the part where the bone had exfoliated. The external graduated compress was used, I should remark, during the whole course of the treatment.

CASE V, (Mahon.)—In July, 1776, M. Andry, physician, sent for me to see a Mr. Doreur, who had been under his treatment for alveolar abscess, occasioned by a lower molar. The offending tooth was not removed, so that the swelling had extended to the muscles of the neck, and caused so much stiffness of the muscles that the mouth could not be opened sufficiently for the removal of the tooth by forceps. I was forced, therefore, to use the elevator, my success with which I attribute to the loosened condition of the tooth. For a time the patient was much relieved; but there resulted, in consequence of the too speedy healing of the gum, two fistulous openings and a carious condition of the bone. One fistula extended along the inner plate of the lower maxilla, the other penetrated the alveolus. I exposed the surface of the bone, kept the external wound open with prepared sponge, and applied twice daily, for eight days, pledgets of lint, soaked in tincture of myrrh and aloes. As the suppuration became less profuse, I applied only one dressing a day. This treatment was followed by the exfoliation of a portion of bone about the size of the little finger nail, after which suppuration diminished and assumed a

healthy character; at the end of the third week the cure was complete.

CASE VI.—In 1765, M. Vergnon, Horologist, sent to me his servant girl, aged twenty-four. The lower part of the left jaw was greatly swollen, the parotid gland hard, inflamed, and sensitive to the touch, and the pain in the face so great, as to prevent sleep. The complexion was leaden, the eyes heavy. The mouth was very offensive from the presence of seven or eight roots of decayed teeth, whilst the last molar on that side, which was carious, instead of being in its natural position, had its crown presenting inwards towards the tongue, and its fangs outwards towards the cheek, where their irritation had caused a large ulcer near the salivary duct. I at once removed the decayed roots and the misplaced tooth, and applied external compresses. At my second visit the pus did not seem to discharge freely upon pressure, and I examined the bone which I found pierced by three canals chiefly at its posterior part, but insufficient for the free escape of matter. I removed with a pair of cutting forceps a prominent portion of the alveolus, and for the external tumor, directed compress and emollient gargles. At my third visit the external swelling was lessened, and I found the patient complaining of a swelling on the inside of the mouth, with a frequent desire to spit. I found, on examination, that this tumor was in fit condition to be lanced, which I accordingly did. The swelling of the parotid soon subsided, the cheek began to assume its natural appearance, and I left the case to take care of itself.

CASE VII.—In 1768, M. Moreau sent to me an old woman, over fifty years of age, who had for more than six months, had a large tumor on the left side of the lower jaw. The bone was much swollen, but in consequence of the indolence of the tumor, the patient had paid little attention to it till she found pus mingling with her saliva. I found all the teeth decayed, and their fangs buried in the gum which was swollen, fungous and fistulous. I made a single incision along the edge of the alveolus, upon introducing my finger through which, I found that the alveolus was fungous and worm eaten; this deter-

mined me at once to remove the offending fangs and a portion of the alveolus an inch long, which was quite detached from the maxilla. I applied dressings of lint, and on my second visit, found about midway in the alveolar canal a fistulous perforation, which seemed to me to penetrate the maxilla and communicate with the tumor below. I determined to open this tumor by an incision within the mouth; for this purpose, I passed a probe into the fistulous canal just mentioned, and then, introducing my lancet to the inside of the maxilla, cut in the direction calculated to meet the point of this probe. A very thick and offensive pus followed this incision, which I kept open by means of prepared sponge, and cleansed with detergent gargles, guarding against the introduction of air by the use of soft lint. By external compression, I determined all purulent matter towards this opening, and when the suppuration assumed a laudable appearance, I removed the prepared sponge, and directed the patient to make a free use of gargles. The ulcers took on a healthy character, the carious bone exfoliated, and at the end of two months I deemed myself at liberty to give the case over to the efforts of nature. As, however, there was still some tumefaction of the cheek, I cautioned the patient against exposure to cold, and recommended a discutient plaster.

I have cured many similar cases by the above treatment; observing that my compression was always gradual, and not too sudden, least by forcing the matter into adjoining structures, I might give rise to an unfavorable train of symptoms, and possibly gangrene. The best plans may become, in experienced hands, unavailing; where, for instance, the tumor points decidedly to the outside, the internal incision will probably be of no service; judgment must in all cases be exercised.

§ 2.—*Ulcers.*

Ulcers are solutions of continuity in the soft parts with more or less loss of substance and purulent discharge. They are superficial when confined to the skin; deep-seated if they penetrate beyond the adipose tissue. If the osseous, tendinous or

aponeurotic tissues are involved, or any cavity, they then become sinuous, and are more properly placed in the class of fistulas, of which I shall speak in the next section.

Ulcers are internal or external. I shall treat only of the latter. Whatever vitiates the fluids, may cause ulcers, as syphilis, scrofula, scurvy, &c. according to their origin will be their character. Their edges may be more or less hard; they may be soft fungous, hard or callous; and lastly, they may be corroding or indolent, according to the destructive character of their action. Venereal, scorbutic and cancerous ulcers are rapid in their progress; scrofulous and carcinomatous ulcers, unless irritated, are slower.

Ulcers may arise from internal causes, as the revulsion or metastasis of constitutional disease; or from external causes, as punctures, depressions, bruises, &c. The latter are usually regarded as simple ulcers, arising from simple causes; but if they be complicated with caries, fungus, &c. in consequence of some hidden cause or mal-treatment, their nature will vary accordingly, and will require different treatment. Ulcers may be recent or of long standing, in the latter case there is usually some vitiated or debilitated state of the system, and caries will frequently be found present.

The prognosis of ulcers is based upon their cause, appearance, extent, duration, nature of the discharge, and age and condition of the patient. If a superficial ulcer, from some external cause, have its edges neither hard, fungous, nor elevated, its surface granular, and the pus not of too green a color, the prognosis is favorable. But if it be pale, fungous, with depressions and sinuses, and its surface bathed with an acrid greenish discharge, the prognosis will be unfavorable. We must not confound ulcers demanding our treatment with those of old persons which often answer the purpose of issues; the discharge from these should rather be promoted than checked. I shall illustrate this subject still further, by detailing a few cases of ulcers about the lower jaw.

CASE I.—A woman aged twenty-eight, had, on the lower jaw, a deep painful ulcer, with hard edges, a profuse discharge

and much fungous substance on its surface. The nearest tooth was carious. This ulcer, the patient stated, arose from a very large hard tumor of the jaw, which, after being lanced externally, by a surgeon, and kept open with lint for several weeks, without benefit, had broken spontaneously within the mouth, and thus disappeared.

The surgeon in attendance, suspected the presence of caries, on account of the fungous granulations, and the profuse purulent discharge, which was disproportioned to the apparent size of the ulcer. On probing with a hog's bristle, (used in consequence of the narrowness of the opening in the ulcer,) the correctness of this conjecture was established, and he proceeded at once, after the removal of the carious tooth, to correct the corrosive quality of the discharge, to cause separation of the necrosed fragments of bone, and to soften the hard edges of the ulcer. This done, [after a tedious treatment of three months, worthy neither of detail or imitation,] the secretion lessened in quantity, the ulcer at last dried up, and the cure was completed, with, however, the unavoidable disfigurement of a depression, and cicatrix at the point where the bone exfoliated. Though we admire the success of this surgeon, we cannot but think the cure would have been considerably shortened, had he enlarged the narrow sinuous opening of the ulcer with a knife, so as freely to expose the carious bone, and thus give opportunity for more efficient treatment.

CASE II.—In 1761, a child, aged nine, was received into the Hotel Dieu of Lyons, for an ulcer, the size of a French farthing, at the left angle of the lower jaw. It was filled with a prominent granulating mass, which the surgeons cut out, and dressed the ulcer with brown ointment. May 15th: dry gangrene supervened, the ravages of which were arrested by spirit of salt, and the eschar dressed with brown ointment, &c. May 25th: the eschar separated, showing a depressed surface which filled with healthy granulations, and formed a perfect cicatrix against the 4th of June. Antiseptics were used during the course of the treatment. In this case, we see plainly a vitiated state of the constitution; and may learn also that fungous

growths from an ulcerated surface are not invariably an index of caries.

CASE III.—In 1759, M. Bataille sent to me a patient with a fistulous chancrous ulcer in front of the left lateral incisor, which from its depth, I suspected to have connection with another on the same side, a little beyond the symphysis. This I proved by introducing a probe into the mouth, which could be passed so as to show itself externally. A third fistulous canal commenced from the zygomatic arch, passed to the commissure of the lips, and thence along the lower margin of the maxilla to within three lines of its symphysis. This last fistula had several sinuses, among which, was one passing transversely into the mouth, involving in its course, a salivary duct and causing a profuse flow of saliva. There were two other sinuses running along the base of the jaw.

Constitutional measures were adopted for the removal of the venereal taint in which this local disease originated, and soothing remedies were applied for the relief of the violent pain brought on by the irritating medicines of an empiric. I then laid open the fistulas, and exposed all parts of the bone where I had reason to suspect carious action. The bone was diseased in places along its entire lower edge, from the symphysis to the left angle. As the reticulated structure was measurably implicated, I refrained from the use of the cautery, for fear of exciting too great irritation and loss of substance, and resorted to dossils of lint dipped in tincture of myrrh and aloes, followed by pledgets saturated with barley water and a little of the above tinctures. At the seventh dressing, exfoliation commenced in different places, after which attention was paid to the closure of the soft parts, and especially of the salivary duct. This latter was accomplished by gentle graduated compression, until no saliva passed out at the external wound, but all escaped into the mouth. The constant movement of the jaw opposed the reunion of the wound, and its edges became callous. I obtained a fresh surface along the lips of the wound by a knife, as in the operation for hare-lip; then, bringing the parts into accurate apposition, I retained them in place by means of a

large adhesive plaster and bandage. I should add that during this treatment the opposite cheek gave signs of inflammation and suppuration, which I was called upon to treat with care and prudence. The success of the best local applications of the surgeon is dependent often upon the employment of proper internal remedies, as we may see in this case.

CASE IV.—A resident of Montpellier, afflicted with a very grave ulceration of the lower jaw, had been the subject of numerous consultations. Oct. 1st, 1738: M. Baux, physician, attributing the disease to a vitiated state of the humors, directed a constitutional treatment and regimen; and for the ulcers, an application of the tinctures of myrrh and aloes. Oct. 20: MM. Deidier and Barancy gave, in consultation, their opinion that the tumor of the jaw was the result of caries of the bone near the molar teeth, and could not subside till the necrosed fragment should separate; that the swelling of the soft parts was too great to admit of sufficient exposure of the bone for the safe application of the actual cautery: that, therefore, frequent spirituous washes should be used, and the separation of the sequestrum left to nature, who would accomplish it in a time proportioned to the patient's age. Simple balsam was also advised for cleansing the mouth, at first much diluted, and gradually made stronger. This course was for some time followed, but it would seem without full success, for we meet with a *fifth* consultation upon this same case, in which the extraction of the teeth connected with the diseased bone was advised. The separation of all the necrosed portion of bone speedily followed this operation, and the patient was restored to perfect health, retaining, however, a swelling of the jaws for six years subsequent. The details of the internal treatment I have here, from the limits of my work, been obliged to omit, but the well informed surgeon will readily know the remedies suited to particular cases.

The extraction of the teeth, so long deferred in this case, should doubtless have been one of the first things done in its treatment. We would note also an ill-judged fear of the consulting physicians to resort to the knife for the free exposure of the

diseased bone. This species of local bleeding often greatly reduces congestion and inflammation, nor have I found it, in the case of many large tumors of the mouth, to cause more than a momentary or easily arrested hemorrhage. The permanent swelling alluded to is not an uncommon result of a chronic enlargement of the bone; we see the same thing in soft and glandular structures.

CASE V. *Incurable Ulcer from the Sting of a Wasp*, (Hildan.)—A young lady was stung, while walking in an orchard, by a wasp, on the side of the face, just below the ear. The pain and swelling, which were great and almost instantaneous, were reduced by proper remedies: but an abscess supervened, which terminated in a foul incurable ulcer. This happened while I was a student of medicine. Every variety of application proved fruitless, and at last the lady ceased to attempt its cure, and remained content with palliatives. She lived to old age, retaining the ulcer, which acted as a sort of issue.

That the simple sting of an insect should cause an ulcer of this character, is owing chiefly, I think, to some peculiarity of diathesis; the position of the ulcer, immediately over the articulation of the jaw, would also tend greatly to retard its healing, from the constant motion of the part. I have inserted this case because of its interest, although it cannot with strict propriety be classed among diseases of the lower jaw.

§ 3.—*Fistula.*

When an abscess or ulcer is neglected, the contained matter will usually seek escape by one or more openings through the skin, at those points where the least resistance is presented, the edges of which openings may become hard and callous. Sometimes the thinner portion of the contained fluid will escape, while the thicker and more active portion will remain, working for itself tortuous canals, which may reach as far as the bone, and injure its texture to a greater or less degree, according to its acrid character, the condition of the bone and the age, &c., of the patient. These false openings are called fistulas. [The

word is used by Jourdain in a wider sense than by surgeons generally. It is customary to restrict the term to those false canals which are lined throughout their extent with a firm membrane, analogous to the mucous membrane, and, like it, little disposed to take on adhesive inflammation.]

Fistula may result not only from external local causes, as the presence of carious teeth or foreign bodies, but also from constitutional vitiation, or the metastasis of some morbid humor. It attacks both hard and soft parts, and may be external or deep-seated. It may be called simple when it has not much depth and only one orifice; complete, when deep and tortuous, with several openings; complete and complicated, when these canals communicate one with another, and implicate adjoining glands or bones.

Our prognosis of fistula will be drawn from its causes, position, depth, number of openings, duration, character of discharge, age, constitution and mode of life of the patient. A fistula of moderate depth, with a whitish inodorous discharge, will be more readily cured than a deep or tortuous one, with a dark greenish, bloody and offensive secretion.

The treatment of a superficial fistula is usually simple. Any foreign offending body must first be removed, and if there be a hard callous border, it must be destroyed by caustics, and the whole treated as a simple ulcer. If, however, the border be raised and fungous, the knife is preferable for its removal. Much care should be taken to prevent the renewed growth of the callous or fungous edges of a fistula, and we should, as far as possible, obtain a uniformly adherent cicatrix, for if there be any, the least, space between it and the bottom of the wound, the disease will return. In complete and complicated fistula, it is necessary that every sinus should be laid open with the knife, and our incisions should, where it is practicable, be large enough to give free access to the deeper portions of the canals. If at the bottom of these fistulas there be found carious bone or fungus, the best application is the actual cautery. Setons, tents, dossils, prepared sponge, injections, &c., will all be found of service; care must be had that the

lips of these fistulas do not close prematurely, before deeper seated suppuration has ceased; at the same time, if the sponge and other dilatants be abused, the union and cure of these wounds will be retarded instead of being hastened.

Some have proposed caustics as a substitute for the cautery and knife. We would not exclude their use, but they require, in certain situations, to be used with great caution. In deep sinuous fistulas their action is not readily watched or controlled, and they may do injury to glands, nerves, aponeuroses, tendons and blood-vessels. It is true that the knife is capable of doing equal injury; but in the hands of a well-informed operator this instrument is under control.

[A large number of cases included by the author under the term fistula, are nothing more than secondary accidents necessarily attending caries and necrosis. Our attention must be directed entirely to the original disease, and when this is cured, the fistulous canals, in the majority of instances, will readily close, except where, from long standing, they have become lined with the mucous membrane above alluded to; in this case they will require separate treatment.]

CASE I, (Manget).—A lady of Basse, aged 66, had, after a severe illness, an inflammation and abscess from the root of a lower tooth. The abscess opened and the pain subsided, but there was always some annoyance felt when eating, and a fistulous canal was established, which all the advice and treatment of her physicians could not heal, for they all agreed in not removing the offending tooth. In 1619 I saw this lady, found the said tooth decayed down to the alveolus, extracted it, after first administering a purgative, applied my escharotic ointment to the callous edges of the fistula, then sprinkled it with powder of precipitate and used a plaster of dates. This treatment, continued for about a month, accomplished a complete cure; [a cure which, if nothing had been done after the extraction of the tooth, would have taken place in half the time.] The root of the tooth was eroded, irregular and marked by layers of osseous matter.

CASE II.—M. Petit sent me a patient who had, for some

months, suffered with a fistula at the base of the jaw, on the left side. The only treatment had been to close up the orifice and thus obstruct the escape of pus; the bone was denuded. I examined the mouth, and removed the fangs of the first molar, which I found to be immediately connected with the fistula, then used graduated compression, and by this simple treatment made a cure in fifteen days.

CASE III.—An individual applied to me for a fistula on the outside of the right lower jaw. It gave no pain, but the constant though slight discharge was a source of annoyance, and a redness had began to appear and increase at the base of the jaws; he therefore sought advice. I suspected that all this mischief arose from the root of the first bicuspid, which, after the loss of the crown, had been plugged. I therefore extracted it, and in a few days the fistula disappeared. The root was of a grayish color, its canal filled with a dark corruption, and on its extremity was an excrescence the size of a pea.

That suppuration should follow the exposure of the dental pulp is not at all surprising. The opening at the extremity of the root becomes enlarged and the periosteum of the tooth and alveolus is thus involved. So long as the canal of the tooth is free, there is a way for the escape of the pus, but when this is closed, as happens when such teeth are plugged, the confined matter seeks escape through the alveolar tissue and soft parts, thus giving rise to fistula. These fistulas are often liable to the periodic formation of little purulent collections, which discharge spontaneously, causing, during their formation, slight loosening of the tooth and a dull pain, these symptoms disappearing with the discharge. Where a carious or plugged tooth, attended by fistula, is free from pain, this is attributable to the death of the dental vessels, and the constant escape of the morbid humor through the fistula. All fistulas do not terminate so happily, as the following cases will prove.

CASE IV.—A lady who for a long time had been annoyed with a fistula at about the centre of the base of the left lower jaw, with which she had tampered by the application of various useless remedies, became at length alarmed by the tumefac-

tion of the jaw and applied to me for relief. I found that all the difficulty arose from a carious first molar, which I at once extracted, applied a diachylon plaster for a time, and soon healed the fistula. The tooth had a fleshy growth on the extremity of each root.

CASE V.—An individual had for more than six months a dark fungous growth embedded in a callous ring at the base of the left lower jaw. From time to time the patient cut off this fungus as it increased, whereupon it seemed to enlarge and much blood would flow. Sometimes he destroyed it with a red hot pin, at other times with caustic. None of these means were of permanent benefit and he applied to me. I removed the two carious bicuspides, cut off the fungus and applied to it red lead, dressed the wound with a mild digestive, and with an ointment to soften the border of the ulcer, closing the treatment with stimulant healing applications.

The cases given above, prove that fistula is not necessarily connected with caries or necrosis of the bone: that where the matter has a free escape, it is not liable to attack and infiltrate the bone; that nature points to the only true cure, to wit, the removal of the offending teeth, so that by thus establishing an internal opening for the vent of matter, the external fistula may be allowed to heal. In the above cases we see only the action of a local cause; we shall see the effect of the combined action of local causes and constitutional vitiation in the sequel.

CASE VI, (Felix Plater.)—[A simple case of sinuous fistula of the lower jaw, cured by the extraction of two carious molar teeth; the external ulcer was treated by ointment and pledgets of lint, and left, in healing, a small scar.]

CASE VII, (Fichet de Flechy.)—A soldier with fistula of the gum, which opened also externally, under the angle of the jaw, over the parotid gland, attended with swelling of that gland and an ulcer over it, was advised by me to have a decayed tooth removed and the mouth of the fistula dilated. He refused to follow my advice and resorted to injections and other like remedies: the consequence was an incurable caries of the lower jaw.

Such fistulas show by their long continuance, the existence of caries of the bone, and require, after the removal of the offending cause, that the diseased bone should be exposed and treated with a view to promote necessary exfoliation. Otherwise sad and perhaps fatal results may ensue.

CASE VIII, (Fichet de Flechy.)—A citizen of Dusseldorp had a severe inflammatory attack of the face, occasioned by a carious tooth; it subsided and left a chronic swelling of the parotid. I advised the removal of the tooth and a timely application of remedies. But as the person suffered very little pain, my advice was disregarded, matter formed, corroded the bone, escaped by a fistula externally, and cancer ensued, which, from neglect and bad treatment, proved fatal in fifteen days.

In cases where the bone has become affected by the purulent fluid, the extraction of the diseased tooth will not suffice for the cure of the fistula unless the bone be again restored to sound condition, as in the two following instances.

CASE IX.—M. Vaudichon sent me a young girl who for eighteen months had suffered with two fistulous openings on the outside of the left lower jaw, caused by the fangs of the first lower molar. These fistulas I found to extend as far as the angle of the jaw, there was no opening into the mouth, and I hoped by the removal of the molar fangs to heal them, but they still persisted. I then by an incision laid them both into one and found the bone denuded and slightly changed. I applied red precipitate, kept up the suppuration, repressed all free granulation, and in about a month accomplished a cure.

CASE X.—M. Savari, surgeon, sent me a patient in whom the fangs of a carious first molar had, after several inflammatory attacks, caused abscess, and external fistula on the left side of the jaw, discharging a thick reddish matter. The extraction of the fangs failed to cure the disease. I therefore passed a thin sharp piece of silver through the fistula from without inward, and for the destruction of several fungous excrescences, drew through it a piece of cotton dipped in vitriol. This, followed by suitable injections, and the use of the compress, did not fail to bring about a cure.

CASE XI.—In 1774 M. Moreau asked my assistance in the treatment of a patient who had caries of the left lower jaw, with three fistulous openings. The patient had suffered several painful attacks from the fangs of the first molar which were buried in the gum. At the last attack, a tumor having formed between the gum and cheek, it had wisely been opened, the fangs extracted and proper gargles and poultices prescribed. Notwithstanding this treatment, the matter made its way to the outside of the cheek and caused a fistula. The wound on the inside of the mouth healed, but a swelling remained about the size of an almond and seemed firmly attached to the bone. This suppurated and opened anew by two fistulous canals which could not be closed by any treatment adopted. The patient soon after began to taste the remedies applied to the external fistulas, showing that an internal opening had now formed, but this was neglected and attention paid only to the healing of the external fistulas, but without success.

M. Moreau was called in, and, in consultation with myself, we agreed to lay open the three fistulas into one, and, as the bone was denuded and altered, we applied the actual cautery, followed by a proper digestive and the tinctures of myrrh and aloes. Exfoliation not progressing as favorably as we could wish, the cautery was a second time applied, together with powder of euphorbium, but not with the desired success. The proximity to the salivary duct rendered certain caustics unadvisable, which might otherwise have been employed, and therefore a third time the actual cautery was tried. M. Moreau then proposed the bone-scrapers, observing that this was the first time he had found the cautery to fail in caries of the external plate of bone, and that it had been especially successful in persons of the age and temperament of the present patient. Corrosive sublimate, which elsewhere would have answered admirably, was here, for the reason above stated, unsafe. I therefore proposed the use of a small pledget of lint dipped in dilute mercurial water, and laid directly on the carious bone. On the eighth day its good effect was very manifest, and in three weeks a piece of bone about the size of two lentils came

away, and by a judicious after treatment the wound was soon healed.

It may be urged that "since in this case a mild eschârotic accomplished more than the actual cautery, would it not be still better to make no application at all, and wait with patience for nature to accomplish the separation of the sequestrum?" I consider the many cases which I shall give of caries of the inferior maxilla, a sufficient and satisfactory answer to this question.

CHAPTER SECOND.

TUMORS OF THE LOWER JAW.

TUMORS are preternatural elevations found on various parts of the body, arising from external causes, as wounds, blows, fractures, diseased teeth or gums, &c., or from internal causes or constitutional vitiation. [The constitutional vitiation may exist, and yet, if not aroused by some local cause, never develop itself. Simple local injury, on the other hand, could scarcely occasion malignant tumor, unless there were present some morbid diathesis to determine the diseased action.]

Tumors are soft, so as to yield under pressure of the finger, such as abscesses in general, atheromatous, melicerous and emphysematous tumors; or they are more or less hard, as scirrhus, steatomatous and carcinomatous tumors. Exostosis has a peculiar firmness and resistance, by which it may be distinguished. We recognize also fleshy tumors, as fungus, cancer, &c.; and cartilaginous tumors, such as are sometimes met with on the gums.

Inflammatory tumors are characterized by heat, pain and redness; absence of pain or cutaneous discoloration mark more or less those of a cold indolent nature. The treatment of tumors must vary with their character, causes, complications, duration and position, also the age, &c., of the patient.

§ 1.—*Inflammatory Tumors.*

Pain, heat and redness, as I have said, characterise inflammatory tumors. The latter symptom will be proportioned to the proximity of the matter to the skin, to its quantity, quality and the increased arterial action. Such tumors may terminate by suppuration or by resolution. In the latter event, whether

it occur in the progress of nature or be produced by art, we should consider how far the resolution may be hurtful or beneficial, and whether a dangerous reabsorption of some morbid humor may not take place. Where suppuration has occurred, the discharge of the contained fluid is the only means of cure. The opening for this purpose, natural or artificial, should be proportioned in size to the quantity of the matter: if made by art, the proper time should be selected for the operation, neither prematurely, before the pus shall have sufficiently ripened, nor too late, lest the absorption or infiltration of the matter should cause distressing symptoms. Regard must be had in our incisions to the course of the muscular fibres; and in tumors about the face we must sometimes avoid the most dependent and otherwise most favorable point of the tumor, for fear of causing disfigurement.

CASE I, (Hildan.)—In 1590, a female applied to me for the relief of a tumor near the left articulation of the jaw. After purging and venesection, I destroyed the tumor with escharotics; and then, as the motions of the jaw impeded the healing of the ulcer, I lessened the extent of this motion by placing a forked piece of wood between the teeth on either side, and directed the patient to live on broths and other liquid nourishment. By these means a cure was soon effected. We see from this case, that the knife is not always necessary in the opening of tumors.

CASE II, (Chabert.)—A soldier came to the hospital with a hard tumor extending from the right angle of the jaw along its base to the cartilages of the larynx. It had commenced five or six days before, with febrile excitement, for which he had been bled. It was indolent and without redness; poultices were applied twice daily, and on the second day the tumor became elevated and inflamed, impeding in a measure the action of the throat. It was now lanced just below the middle of the right jaw, and discharged a small quantity of blood and pus, was treated with dressings of dry lint, and a small pledget dipped in a healing solution was laid between the lips of the wound. The patient was purged and the hard tumor which continued

after all discharge had ceased, was dissipated by the use of a resinous plaster. On the twentieth day from the incision, the case was cured.

CASE III, (Chabert.)—A certain priest had, for some days suffered with a considerable tumor under the right lower jaw, hard, colorless and impeding deglutition. He had been bled once; I repeated the venesection, gave a sudorific and aperient decoction, and twice applied an emollient cataplasm. Next day, repeated the purge, and on the third day bled again, together with an enema and a sudorific. On the fourth day the pulse was more open; gave a purge and a sudorific. On the fifth day the inflammation of the tumor had extended to the cheek and towards the clavicle; deep seated fluctuation was perceptible. I plunged the lancet in the direction of the thyroid cartilage, a small quantity of matter escaped; I enlarged the opening and dressed it with dry lint. Deglutition was at once relieved, and on the sixth day the fever and inflammation was much lessened. The tumor was poulticed and a medicated pledget of lint laid into the incision; the patient was again purged on the eighth day, and on the fifteenth day was dismissed, entirely cured.

The reporter of these two cases remarks, that "he has cured many similar cases by the above simple measures, in a much shorter space of time, than could be done by the useless and often hurtful array of local applications, as used by the ancients." Modern treatment is certainly less complicated, especially in the use of ointments. Sudorifics and aperients, form a very judicious part of M. Chabert's treatment, yet they will not, in all cases, be admissible: where, for instance, the matter is very abundant or deep-seated, and disposed to form sinuses, or where there is much fungus or proud flesh. The incision in such cases must be dilated and a discharge kept up for the disgorgement of the parts; this will require resources on the part of the general system which should not be weakened by depleting agents.

CASE IV.—In 1768, an individual came to me with a tumor at the base of the left lower jaw, the size of a walnut. It had

been free from pain and discoloration, till one evening, after indulging in convivial excess, it became painful and swollen, and on rising next morning he found it much reddened and inflamed. Poultices were advised, under the use of which the tumor broke; the opening was dilated, simple suppuratives were used, and after a few days the wound closed and the patient seemed to be cured.

After the lapse of eight days, the muscles of the neck became swollen, deglutition was difficult and an inflamed cord or line was seen from the seat of the tumor to the region of the clavicle. The patient was bled and put upon strict diet, and emollient poultices were used to mature the suppuration; a long incision was then made from the previous fistula down to near the clavicle, and dressed first with dry lint, afterwards with dossils dipped in a stimulating suppurant. For twenty-one days the discharge was abundant; it then diminished, healing injections were employed, all fungous granulations were repressed, and on the forty-seventh day the patient was cured without fear of relapse. The secondary disease arose in this case from want of sufficient dilatation of the first fistula, and the non-employment of graduated compression to resist the downward infiltrating tendency of the purulent matter among the muscles of the neck.

CASE V, (Chabert.)—A soldier came to the hospital with an elevated, painful, colorless tumor at the angle of the lower jaw, to which emollient poultices had been applied. There was febrile disturbance, for which he was bled; injections and warm drinks were administered, and in two days a redness was perceived at the base of the ear. A resinous plaster was applied to the spot, and the poultices were continued; three days after fluctuation was perceptible there, and it was pierced with a lancet. Only blood at first escaped, but on introducing a hollow sound with some little force an abundant ash-colored and very offensive matter was discharged, and by enlarging the opening with the scissors a still greater quantity of matter escaped. I dressed the wound with a broad dossil of lint, applying compression by a plaster and bandage. Poultices I did

not think necessary. In three days the fever subsided, the patient was purged, suppuration was abundant and fresh dressings were applied twice a day. The matter contained in the lower part of the tumor pointed near the larynx, where an incision was made for its escape, the lips of which were kept open by a medicated pledget of lint. Dressings were applied now, only once daily, and an expulsive compress was used; in thirty-five days the openings were both healed. Where an opening has formed naturally in the upper part of a tumor it becomes sometimes necessary for the surgeon to make a counter opening in a more dependent part, in order to the free escape of the contained matter, especially, in cases where the seat of the purulent collection is so deep-seated as not easily to be managed by compression.

§ 2.—*Indolent Tumors.*

Such tumors are, as I have remarked, characterized by freedom from pain or discoloration of the skin. Scrofula, rachitis and suppression of the milk during lactation, are the usual causes of these tumors, which are found mostly in the glandular, adipose and highly vascular tissues, and in persons of lymphatic and melancholic temperaments, rather than in the sanguine and choleric. Their consistence depends upon their situation and structure. When seated in glandular structures, they are usually of a scirrhus hardness, resisting the pressure of the finger, to which other tumors yield, as the melicerous, containing a honey-like substance, and the steatomatous, with contents resembling suet. Arising from purely local causes, from constitutional causes, or from metastatic action, we may regard these tumors as either benign or malignant; and in our treatment must have due regard to their causes, the age, sex, &c., of the patient, in deciding upon the propriety of attempting their resolution or removal; otherwise we may, by rash and too violent measures, develop some malignant tendency.

CASE I, (Plater.)—A young girl who had recently been cured of a leucoma and consequent weakness of the eyes, had glan-

dular swellings under the chin, and in 1709 was brought to me by her parents, with a tumor under the left side of the chin, which had gradually acquired the size of an apple, hard, not discolored, and not painful to the touch. With a view to remove this deformity, I ordered the following plaster: *ochre* ʒ ij; *ashes of willow bark, cockle seed, stercus canis, āā* ʒ j—*mix and reduce to powder*; *gum ammoniac* ʒ j, *dissolved in strong vinegar*; *quicksilver*, ʒ ss, *long agitated with turpentine*—all to be made into a plaster, and renewed at intervals for a month. The tumor was then measurably reduced, and in places softened. An incision was made and the discharge promoted by a poultice of roasted onions; but, inasmuch as it was very scant, I applied caustic, and after the separation of the eschar there flowed forth a thick, white and oily fluid. The opening was dilated with a piece of gentian root, and a plaster of diachylon was laid over it; also a plaster of ochre to soften the tumor. A hard substance, enveloped in a follicle, was discharged, which caused an enlargement of the ulcer. The patient continued to use a sanative drink night and morning, and on the supervention of pain, ointment of ceruse, (sub-carbonate of lead,) was used. After four days, when the discharge seemed rich, oily and reddish in color, the following detergent, *turpentine*, ʒ j; *oil of rose, wine, āā* ʒ j; *extract of celery*, ʒ ss—was applied by means of linen strips, and the ceruse ointment and sanative lotion continued. Some days later, a surgeon, under my direction, gave vent, with the knife and by the aid of compression with the finger, to a large quantity of fluid, similar to that first discharged, which was contained, as it were, in a sack; the ulcer seemed now to reach the bone. To give the more complete issue to all impurities, I now applied linen strips soaked with a solution of white vitriol in wine, protecting the external parts with ceruse ointment. Two days after, I sprinkled on the sore a solution of wine and vitriol, allaying the pain which it caused by honeyed wine and oil of rose. After this, granulations began to form and fill the wound; when too exuberant they were kept down by burnt alum, and thus the patient was cured.

CASE II, (Plater.)—The Spanish Ambassador to one of the Swiss Cantons had a tumor under the tongue, discharging a serous fluid, and subsequently another under the chin, as large as an apple, free from discoloration and indolent. I judged it to be an atheromatous tumor, and advised the knife as the most effective remedy; but my patient preferred the caustic, and I therefore applied it twice, followed by a dressing of cabbage leaves smeared with butter, after which I used upon the eschar a dressing of turpentine and yolk of egg. Emollient fomentations and poultices were added until the separation of the eschar, and thus the tumor gradually lessened, the matter was discharged, and soon all swelling disappeared.

CASE III.—In 1774, M. Fumée, physician, sent to me a valet of the late Prince of Conti, who had been for some years under treatment for various affections of the upper jaw. There had finally resulted a large, hard, colorless tumor of the right parotid, which involved in tumefaction all the adjoining parts. It was at first neglected and in fact seemed disposed to yield to the use of purgatives. But shortly the parotid, from being engorged, insensible and vacillating under the finger, became fixed and to the touch painful. Emollient poultices and purgative medicines removed these symptoms, but ere long they returned with renewed force. Applications for hastening and maturing suppuration seemed productive of more harm than good, and the greatest relief was obtained from simple emollients; by the use of these he was enabled after a time to return to service; but scarce had two months elapsed before the disease again recurred. This time it would not yield to the previous remedies, and M. Fumée was consulted.

I saw this patient Feb. 2d, 1774. The cheek was hard and tumid, the lower eye-lid much swollen, and there was much tumefaction behind and below the ear, along the whole base of the jaw, and among the muscles of the neck. Venesection did not seem to me to be demanded, and I advised poultices, together with roasted lily bulbs. Under the use of these, two fistulas formed, one at the angle of the lower jaw, the other just below the zygoma. These two communicated with each other,

but the patient would not consent to my wish to unite them by incision; I therefore was forced to be content to continue my maturative poultices. Two other openings soon formed along the base of the jaw, and, spite of every care, still two others, one just below the orbit and another on the cheek near the salivary duct. The second two, at the base of the jaw, I opened into one, to guard against caries of the bone, which I found to be denuded; the first two suppurated very imperfectly.

This grave state of things seemed to justify an active treatment. I prepared a plaster with an opening sufficient to embrace all the fistulous points, and then over the whole surface which was thus exposed I applied caustic, touching lightly in the region of the salivary duct, and the angle of the eye. I then applied suitable dressing; in five days the inflammation subsided, the suppuration was abundant, and in eighteen days the eschar separated in one mass. The cheek and all the other parts were now less hard and swollen; the suppuration assumed, under my remedies, a healthier character, and gradually lessened; but the parotid still continued indurated. I applied to it a lozenge* of corrosive sublimate, thereby causing it to come to a head and suppurate properly. In about six weeks, varying my treatment with the exigencies of the case, I accomplished a cure. It must be observed, that purging, diet, and other suitable general measures were observed, during the progress of this case.

I think, in similar cases, that an early establishment of one or more points of suppuration, might prevent the necessity for the somewhat hazardous use of caustics; though these, in case of indolent tumors, where the discharge is sluggish, are decidedly preferable to the knife, because more sure to establish a new and healthy action.

CASE IV, (Manget.)—When at Neuchâtel, in 1690, a young girl, five years old, was brought to me with a glandular tumor, just below the centre of the left side of the jaw. This tumor

*Prepared by mixing it with crumb of bread, about two grs. to the lozenge, and allowing it to dry.

had caused the displacement of a tooth which was readily removed with the forceps; but the tumor still continued to grow, and gave rise to caries of the adjacent bone. As the parents were reluctant to follow my advice, to excise the tumor and apply the actual cautery to the bone, I had recourse to pledgets of lint, saturated with volatile elixir of sal ammoniac, and various balsams; used in conjunction a desiccant ptisan, with an occasional purgative; and thus, without any other treatment brought about a cure.

CASE V, (Fichet de Flechy.)—I was consulted, while at Dusseldorp, in the case of a young girl of twelve, for a swelling of the lower portion of the parotid, which caused a considerable tumor at the angle of the jaw, gave rise often to much inflammation and redness of the eye of that side, and sometimes of both eyes, and for which, various remedies had unavailingly been employed. I found upon examination, that there were on that side of the mouth two decayed molar teeth; I advised their immediate removal, the administration of a purgative, an emollient plaster to the tumor, and a collyrium for the eye. My directions were followed and the child was completely cured in fifteen days. Many other examples are on record of ophthalmia and parotitis, resulting from a bad state of the teeth, and sometimes during the time of the eruption of the wisdom teeth.

CASE VI.—William Crosset, tobacconist, of Savoy, aged sixty-five, was received into the Hotel Dieu of Lyons, for the treatment of a malignant fever. After some time he began to feel a pain and hardness at the lower angle of the jaw. The pain increasing daily, he was removed to the surgical wards and his face dressed with anodyne poultices. On the sixth day fluctuation was perceptible near the centre of the masseter muscle, though the rest of the tumor continued hard. It was lanced and a small quantity of pus escaped. A small pledget of lint was introduced, and the first dressings were renewed upon the tumor. The tent of lint was charged first with a digestive, and then with styrax.

On the fifth day fluctuation was perceptible at the angle of

the jaw, and on making an incision a considerable quantity of laudable pus escaped. The next day the fluctuation was found to extend under the buccinator muscle; on introducing a sound much matter was made to escape. Anodyne poultices were still used, and afterwards a healing stimulant decoction. Behind the angle of the jaw was a sinus, into which a tent was introduced, charged with brown ointment, and gradually lessened as the sinus healed up. The patient was at last dismissed from the hospital, with merely a superficial ulcer the size of one's nail, in a very favorable condition. This case is somewhat analogous to the third one; in the third, suppuration was not favorable, and there was induration and œdema, under which circumstances the knife is often not so beneficial as caustics.

CASE VII, (Martin.)—In December, 1763, a man named Josseman, aged thirty-six, came to our hospital with a lacerated wound of the cheek, inflicted with a bottle. A portion of the masseter muscle and integument was torn away, and the substance of the parotid gland wounded to the depth of about three lines. After careful examination, to be sure that no glass remained in the wound, I cut away with scissors the lacerated shred of muscle and skin, clipped the ragged edges of the wound, and brought its lips together, retaining them in close apposition by means of a bandage. On the second day I observed the gland to be a little swollen; but as this swelling had not increased much against the fourth day, I attributed it rather to the compression of the bandage than any obstruction of the salivary duct. On the seventh day I removed the bandage, found the wound in an excellent condition, applied a dressing of balsam, and, still apprehensive of the possible occurrence of salivary fistula, renewed the bandage for four days longer. After that I used simply dry lint, and the cicatrization progressed without causing any appreciable deformity.

The two last cases do not come under the class of indolent tumors, but, as they are interesting and instructive, I trust I shall be pardoned for introducing them in this connection, rather than give to them a separate section.

§ 3.—*Fungous, Cancerous and Carcinomatous Tumors.*

Fungous tumors are, in general, fleshy, soft and spongy masses, of a mushroom or cauliflower form. They vary in form, mode of attachment, color and solidity. If adherent by a narrow neck, they are sometimes called polypi; if by a broad base, fungus. If the surface be uniform and devoid of sensibility, we regard the fungus as simple; but if tuberculated, fissured, covered with an acrid, glutinous humor, and attended by dull or lancinating pains, with its surface marked by a greater or less number of varicose veins, we may pronounce, with confidence, upon its malignancy. Again, we regard them as benign or malignant, accordingly as they arise from a purely local cause, as dental irritation, &c., or from some special internal vice, as scrofula, scorbutus, syphilis and the like, or from the metastasis of some noxious humor.

Their slow progress causes them often to be neglected, and even where they do spring up spontaneously, as it were, and progress rapidly, we may fairly presume the silent, unseen action of some latent poison, awaiting a favorable moment for its mushroom-like development. Such resist all the resources of art. Simple fungus, on the other hand, arising from appreciable local cause, may be watched in its progress, and often successfully arrested.

In both benign and malignant forms the bone is often involved, as well as the investing structures, and may become either carious or softened, implying usually the presence of some ruling internal vice. Fungus may be destroyed either by knife, cautery or ligature. The relative merits of each mode, as adapted to particular circumstances, will appear on examination of the following cases.

CASE I.—In September, 1756, M. Perrault, surgeon at Soissons, was called to see a lady who complained of difficulty of speech, and also of walking, which she attributed to an attack of paralysis, which she had the year previous. He found a considerable tumor within the mouth, situated at about the middle of the left lower jaw, produced apparently by a swelling

of the gum. As it covered several of the teeth, M. Perrault advised their extraction; four were removed, and a ligature was then applied to the tumor, which came away on the sixth day. The patient recovered perfectly without the least untoward accident.

CASE II.—In 1765, a lady aged sixty, consulted me respecting a tumor on the right side of the lower jaw, which had been there about a year. I found, on looking into the mouth, a fungous tumor of the gums, with two fistulous openings in its centre, which I traced to the fangs of the two molares whose crowns were destroyed by caries; it was so large that the mouth could not be closed without its laceration by the upper teeth, causing considerable hemorrhage. Gargles were used, scarifications, butter of antimony and other caustics, and even the actual cautery, but without benefit. I then, by excising the fungus, exposed the fangs, which I was persuaded were the cause of the mischief, and extracted them. Finding the bone carious, I cut down to expose the extent of the caries, dilated the wound with sponge, and the next day applied the cautery; dressed the wound with lint charged with suitable suppurative mixtures, and continued this treatment for fifteen days, not neglecting proper injections. The sequestrum began to loosen on the twenty-seventh day, and on the thirty-third came away; the usual healing remedies were applied, and on the forty-seventh day the patient was restored to full health. In other hands the case would have had like favorable issue after the removal of the offending cause.

CASE III, (Wepser.)—A man, aged forty-five, of a lymphatic temperament, had for some months felt a prickling sensation on the right side of the lower lip, accompanied with tooth-ache. A fungous excrescence appeared near a carious tooth, which, together with the adjoining one, also carious and loosened, the surgeon extracted. A large fungus grew in the place whence these teeth were removed, spreading above and below, and covering several molar teeth. It was so soft as to be readily torn away with the fingers; the cautery was used for the cure of the caries, supposed to be the cause of the fungus, and vene-

section and purging were freely resorted to. A second fungus appeared at the symphysis of the jaw, on the excision of which the bone was found carious, with a transverse fissure extending in depth about two fingers' breadth. It was necessary to make an external incision for the removal of the sequestrum of necrosed bone, and then apply cautery to the carious and softened bone, employing antiseptic gargles and repressing all free granulation. The fungus, however, from the gum, cheek and edges of the wound, was so rapid in its growth as to defy all attempts to repress it, and the jaw, in consequence of the solution of continuity in the bone, was so relaxed and movable as to require the support of an apparatus of sheet iron under the chin. The abundant discharge of lymph hindered all efforts to heal the cauterized bone.

The jaw bone in this case had long been the seat of some constitutional vice. He was of a family all of whom had curvature of the spine, and he himself was very round-shouldered. The above statement being presented by MM. Hurtero, Leclerc, Manget, &c., to M. Wepser, Dec. 1689, he replied that though he suspected a cancerous tendency, yet as the cheek had not as yet been eaten away, there was some hope. The pendent condition of the jaw might be owing to a want of tone in the muscles; he scarcely thought the bone completely divided by the caries. The caries must be destroyed by cautery, otherwise the fungus could not be successfully repressed. To check the profuse serous discharge, and promote the separation of the necrosed sequestra, he advised a vapor bath* and the trepan of Fabricius de Aquapendente.

CASE IV.—An individual from Beauvais consulted me for a tumor of the right cheek and lower jaw. Some time [previously], the bicuspides and first molar loosened and hindered

* This bath, proposed by the ancients, but long since disused by the moderns, seems again to be coming into use. Many persons of distinction have derived signal benefit from it. In congestions, rheumatisms, and other maladies in which we seek to restore a free circulation or some suppressed secretion, this bath would seem to merit our notice. The patient is to be enveloped in a blanket or other covering, under which the vapor of hot water is made to pass, and meanwhile he is required to take freely of warm aromatic drinks.

mastication so that he had them extracted. A spongy tumor sprang from the sockets, spread to the cheek, and bled on the slightest touch. There was dull pain, and the cheek was slightly swollen, but below the jaw, and among the muscles of the neck, there was much tumefaction, and deglutition was difficult. The saliva flowed very freely, and the mouth emitted a very offensive smell. The gums were in an unhealthy state, and the bone underneath the fungus was carious and yielded readily to the probe. The livid complexion of this patient, weak eyes, offensive eructations, and frequent inclination to sleep, all combined with the above symptoms to give rise to a strong suspicion of a carcinomato-scorbutic diathesis, and I therefore declined to attempt a cure. Others subsequently made unsuccessful efforts, and a certain distinguished practitioner, confirmed my view of the case, by recommending palliatives alone. The patient at length placed himself in the hands of an impostor, who, by the use of caustics, caused the disease to spread over the whole cheek, and prove fatal in six weeks.

CASE V.—In 1768, a woman over sixty years of age, fell and struck her chin violently. The pain and ecchymosis were relieved by applications of camphorated sea-water, but the symphysis of the chin continued to be red and very sensitive to the touch and to changes of temperature. Three months or more afterwards, she was seized one night with lancinating pains in the lower jaw, and in the morning found the chin and lip so swollen that the mouth could not be opened. The incisors and canines became loose and elongated, and a fungus appeared at the symphysis about the size of a nut, and increased in spite of all applications of caustics, &c. It was at this stage that I was consulted. My opinion was, that the fall had fractured or otherwise injured the external lamina of the jaw bone, and that caries had resulted, with more or less effusion and change of structure within the bone, as was shown by the abnormal state of the teeth. M. Morand was called in and coincided with my view of the case. I extracted the six teeth and removed the tumor, cutting down to the bone; then applied caustery to the bone, in the direction of a dark line running ob-

liquely across the chin, and also to the alveolar sockets, which seemed to be sinuous. I applied dry lint till the nineteenth day, then used the cautery again, and dressed the wound with balsam of Fioraventi. Subsequently I enlarged the opening at the side of the symphysis with a sharp-edged cautery, after which the discharge was abundant and the pain and redness diminished. On the forty-third day a necrosed portion of the symphysis, corresponding with the above-named dark line, three lines in length by about two in thickness, began to separate, and on the fifty-sixth day came away. The after treatment progressed favorably, and ended in a complete cure in about three months and a half.

It was owing to the good constitution of the patient that the first attempts did not prove fatal. Some cases of an apparently trifling nature have sometimes a fearful issue. In all instances we must seek for a removal of the cause of the disease. Many other cases might be given of fungus of the lower jaw.

CHAPTER THIRD.

CARIES, NECROSIS, EXOSTOSIS AND SPINA VENTOSA.

§ 1.—*Caries.*

CARIES of the jaw is almost invariably preceded by abscess, ulcer or fistula. In the first volume I have given the rules and precautions necessary in the general treatment of caries, and shall only at present notice such modifications thereof as the position and structure of the lower jaw may demand.

The actual cautery, so strongly recommended by both ancients and moderns, is highly useful both from its activity and its desiccant property; but when incautiously applied to the lower jaw, especially where the spongy tissue is the seat of the caries, it may, from its violence, do much mischief, causing inflammation and suppuration in the reticular structure, occasioning loss of substance and a train of other evils.

I regard the mercurial water, (*l'eau mercurielle*) properly diluted, as altogether the best application in caries of the lower jaw. It acts gently and with safety, and at the same time gradually changes the diseased action, promotes the separation of the necrosed bone, and the formation of firm cicatrization, and effectually represses all exuberant granulation. Of the superiority of this remedy I am convinced from my own experience, as also from that of MM. Peige, Barate, Rochard, Bouleyre and others, as recorded in our journals. I shall support my views by the detail of a few cases.

CASE I.—In 1760, Mad. Dumeyer sent to me her daughter, aged fifteen, for maxillary caries, with the previous treatment of which she had become dissatisfied. I removed some fragments of a decayed second bicuspid, the original cause of the disease, and then made use, successively, of oil of canella,

butter of antimony and the actual cautery. They all served only to increase the pain, inflammation and suppuration, and resulted in an extensive sloughing of inner and outer plates of the lower jaw, so much so that the anterior and posterior parts of the right side could be moved about independently of each other. At the advice of M. La Forest I applied pledgets of lint dipped in mercurial water, under which treatment I soon had the satisfaction of seeing the pain lessen, and the granulations assume a healthy appearance. In fact a cure was soon established, with only a depression at the point of exfoliation, which, as the patient became older, diminished, and in 1770 had entirely disappeared.

I have since successfully treated five cases in a similar manner. In one of these the bone around the three molar teeth was carious; two of these teeth were decayed, and the third molar, though sound, was yet so loose as to require removal. There was a scorbutic tendency requiring specific remedies. Complete exfoliation was accomplished by use of the above remedy in seventeen days, and in forty-three days the cure was complete.

Pechelin remarks upon the variety of causes of dental disease, and the consequently varied treatment requisite:—a corrosive property in the different fluids of the system, or an acidity of secretion irritating the nervous filaments, or some metastatic action, as during pregnancy, especially in the first months. He speaks also of the malposition of teeth and the retention of food between them, as causes of disease and pain; and thinks it probable that the mucous secretion may acquire an acrimony which in spite of remedies will act injuriously upon the gums, teeth and bone. He gives the case of a physician affected with a spongy disease of the jaw, which ceased its ravages upon the separation of the diseased bone. Also the case of a fistula near the first lower molar, the suppression of which caused such suffering that he was forced to continue its discharge. These cases of fistula are not infrequent, and are usually connected with caries or other disease of the bone. This subject I have fully illustrated in the first volume, and shall therefore

give it no further illustration in this chapter, which is more expressly designed to show the superiority of mercurial water in the treatment of caries of the lower jaw.

§ 2.—*Necrosis.*

By this term we understand a complete caries or true sphacelus of the bone. It has its origin always in some vitiation of the humors, scrofulous, scorbutic or metastatic. It is analogous to mortification in the soft parts, though not marked by such decided or evident symptoms. A peculiar elastic distension of the bone, or mal-condition of the investing soft parts, with dull, deep-seated pains, form the surest indications of the presence of necrosis. A diseased state of the gums frequently attends it, but is by no means a distinctive feature. Necrosis may be partial or it may involve the entire bone. The following cases will throw light upon this disease.

CASE I, (Duvernay.)—A lady, aged forty, who had had fourteen children and many miscarriages, had an herpetic eruption on the hands. Temperament good, menstruation regular. The eruption disappeared in twenty-four hours after the use of a certain wash, but violent emesis and coughing followed, and subsequently pain in the head, with an erysipelatous affection of the face and neck, which caused great tumefaction of the lips, eye-lids and salivary glands. The menses ceased to flow; the teeth of the lower jaw loosened and dropped out, and the nose became flattened, but without apparent suppuration or discharge of bony fragments. During the twelve years since this attack, she suffered at certain seasons, especially in spring, with erysipelatous swelling of the lower lip. After a particularly violent attack, in April, 1700, which excited profuse salivation, she experienced an unusual annoyance in the mouth, and on introducing the finger she felt a hard and irregular substance along the lower jaw, which the surgeon supposed to be the exposed alveolus. After a fruitless use of gargles, &c., M. Duvernay was consulted. He ordered purgative and diaphoretic revelsants, to relieve the discharge from the mouth, and directed antisept-

tic gargles of sage, mint, centaury, &c., which he followed by a gargle of elder flowers, flaxseed, figs and sweet spirits of nitre. Each day he loosened the diseased fragment of bone, and on the eighteenth day it separated, without bleeding or pain. Ptisans were continued, the buccal discharge ceased, the glandular swelling disappeared, and health was finally established. This sequestrum was found to be a necrosis of a very large part of the lower jaw; it decreased much in volume on being dried.

CASE II, (Duvernay.)—In a lady, aged forty, who had passed through a mercurial course, there were ulcers of the gums of the lower jaw, with necrosis of the bone. By careful removal of the sequestrum, the cure was accomplished without any external disfigurement.

In two other cases, one under M. Louthau, the other under M. Tarin, where abundant salivation had attended a mercurial course, the teeth loosened and protruded from their sockets. In the first case, an attempt to extract the first lower molar resulted in the removal of the other two molares, with the alveolus investing all three. In the second, the two molares on either side, with their alveoli, were extracted together. In these cases there was necrosis of the alveolar process. After the separation of the dead bone, nature generally works a prompt cure. In necrosis we have complete death and destruction of the nutrient vessels, as is shown by the absence of suppuration before or after exfoliation; whilst in caries we always meet with this attendant suppuration.

CASE III, (Baïer.)—Madame Crorahet, aged forty-eight, had suffered from several painful attacks in the teeth of the lower jaw, resulting at length in an ulcer, which was ultimately cured. But soon after she began to feel similar pains in the jaw, for the relief of which she trusted to simple domestic applications. The alveolus of that side, with the teeth, came away without pain or accident, leaving behind no other annoyance than a slight deafness in the corresponding ear. I should attribute the necrosis in this case rather to constitutional vice than to any ill effects caused by the suppression of the ulcer.

Felix Plater gives a case of necrosis following syphilis, in which a large portion of the lower jaw and the teeth were lost, giving rise to great disfigurement. In vol. xiv of the Memoires of the Royal Academy of Surgery, may be found many cases of necrosis of the lower jaw. Other bones also are liable to this disease, but they come not within the design of the present work.

I pass now to exostosis, which differs from necrosis in this, that in the one there is excessive action of the nutritive vessels, in the other, an entire and we may say sudden suspension of nutrition. This loss of vitality gives free action to the putrefactive tendencies; and we shall also observe, ordinarily, that the limits of disease are definite from the very first.

§ 3.—*Exostosis.*

By exostosis we understand a hard, unnatural elevation on the surface of bone, caused by some special disease. It is simple and benign when merely external, and may arise from external injury, dental disease and such like causes, being more or less rapid in its progress, according to the density of the bone. Complete exostosis, involving the deeper structures of bone, springs more from constitutional vice, as scrofula, scurvy and the like, and is usually considered malignant in its nature.

Venereal or scorbutic exostoses are generally more rapid in their progress, but at the same time admit more frequently and readily of cure, than those from scrofula, &c. In these last, we oftener meet with a recurrence of the disease: whilst in the former the exostosis is more firm and compact. In the looser and more cellular forms of exostosis, the infiltrated morbid secretion frequently gives rise to abscess within the bone, constituting that form of disease known as *spina ventosa*.

Exostoses proper do not affect the color of the skin. They often impede the movement of the parts involved, especially when near the joints; and when of syphilitic or scorbutic origin, often give much pain. The tumor is firm and unyielding, and may involve the entire bone or only a portion of it.

It is important to distinguish between exostosis of the maxilla and simple tumefaction from the infiltration of matter. In the latter case the swelling is more rapid and more painful to the touch; in the former the teeth are firm in their sockets, and the gums not tumid. Swelling and exostosis are often the precursors of caries; each demanding their appropriate treatment.

The treatment of exostosis must vary with its size, position, duration, &c. Trephines, saws, perforators, bone-nippers, mallet and chisel, scrapers, actual and potential cauteries, have all been resorted to, in connection with mercury and other internal eutropic remedies in the cure of this disease. A variety of instruments becomes necessary, from the varying size, firmness and position of the exostosis; the files and scrapers remove all asperities of surface; the actual cautery generally follows the use of instruments, especially in young subjects, or where the bone is covered with unhealthy fungus; escharotics are used under like circumstances, where the disease is superficial, but usually, and especially in the deeper-seated cases, dry dressings are preferable,

It is not in all cases possible or advisable to remove exostosis. Those occurring in rachitis, or those of long-standing, such as are limited in size, or such as occasion neither annoyance or deformity, are of this class. Internal remedies will sometimes suffice in the incipient forms of the disease, but the later stages demand the aid of surgery. In fine, we would urge prudence in all operations for the removal of these tumors, and a careful regard to the nerves, tendons, arteries and other important structures adjoining the seat of disease: a want of such caution has often been fraught with most serious consequences. On this subject consult the treatises of MM. Petit and Duvernay. I pass now to a few cases illustrating the difference between exostosis and simple swelling of the lower jaw.

CASE I.—In 1770, a laborer, aged twenty-four, applied to me. For some years he had suffered from the effects of diseased fangs, but the relief given by the spontaneous discharge of purulent matter allayed his fears. The tumor, however, in-

creased; the extraction of the fangs was advised and performed, but the swelling continued. A mercurial course was recommended, to which the patient was unwilling to submit; he therefore sought my advice, and consented, after being convinced of the nature of his disease, to the performance of the operation which his case demanded.

After exposure of the exostosis by the incision of the investing mucous membrane, I proceeded to its cautious and gradual removal, by means of a sharp, flat chisel, slightly curved in the direction of its axis. I dressed the wound with lint, and the patient passed the night well after so tedious and painful an operation; the hemorrhage was slight. At the next dressing I noticed that the bone was soft and spongy, and on the next day perceived that the discharge was dark and offensive. Here was purulent infiltration, and for its cure I applied the actual cautery five times in seventeen days, followed by suitable balsams. Exfoliation took place, the wound had a healthy character, and on the thirty-fourth day the cure was complete.

I subsequently treated in a similar way an exostosis upon the right angle of the jaw. The operation in this case was external, and constitutional treatment was necessary for a suspected venereal taint.

CASE II.—In 1774, a pensioner of the College of Louis the Great had an alveolar abscess of the right lower jaw, from a carious first molar. Relief was obtained after the discharge of the contained pus, but the recurrence of the disease rendered extraction advisable. From the extreme swelling of the bone, exostosis was suspected, and M. Missa, the family physician, called me in consultation upon the case. I found the osseous tumor yielding, and pressure gave pain over the affected tooth. I therefore pronounced it to be simple infiltration and not exostosis. A perfect cure was effected by the removal of the tooth, to the extremity of the fangs of which were attached two fleshy masses about the size of a pea.

I once met a person, forty years of age, who had quite a large exostosis upon the right angle of the lower jaw, which had first appeared in early youth. For the last ten years its

growth seemed to have been arrested. I advised quiet. Many other cases of exostosis at the symphysis, and at the angles of the jaw, have come under my observation, arising from local and constitutional causes. In M. Fauchard's *Surgeon Dentist*, vol. i, folio 436, we have the detail of a case of exostosis.

§ 4.—*Spina Ventosa*.

Spina ventosa is true abscess of the inner structure of bone, leaving the external plate sometimes a mere shell, and showing, by the pain experienced, the corrosive nature of the humor. Scrofula and syphilis are its usual causes, and also scurvy, the existence of which will be shown by the morbid state of the mouth generally. Where the glands and gums are not affected, we may strongly suspect the presence of a venereal taint, notwithstanding the protestations of the patients themselves, and if we desire a cure, we must direct our treatment accordingly. The mercurial panacea and corrosive sublimate are very effective when appropriately and prudently applied.

Abscess in bone is to be treated like abscess generally; and escharotics, cauterly, &c., must be applied as occasion demands. Yet despite our every care, it will not unfrequently assume a malignant and fatal character. I shall content myself with giving two cases of this form of disease.

CASE I.—In 1775, a person applied to me, who had been for three years under fruitless treatment for supposed fistula near the curvature of the right coronoid process. The bone was an inch thick between its laminae, as far as the first molar, presenting a considerable prominence externally, between the angle of the jaw and that tooth. The molar teeth had been removed. The bone yielded under pressure, giving evidence of a contained fluid, and the investing gum was hard and insensible. The patient was subject, especially in damp and chilly weather, to severe and painful swelling of the face, which confined him to the house, and often to his bed, for many days.

I advised, and with the consent of the patient, performed, the separation and removal not only of the gum, but of the

whole tumor, embracing all the bone that was in any way softened. A large quantity of fluid, of the color of wine-lees, escaped. Dry dressings were applied, and in forty-eight hours removed. For some days I applied ægyptiac,* and afterwards pledgets charged with a stimulating ointment mixed with a little red precipitate. Three several applications of mercurial water removed the asperities of bone and the fungous granulations. An aromatic and healing gargle was used at each dressing. Under this treatment, the wound progressed slowly and surely towards a cure, and in six months was perfectly well. There remained a slight permanent enlargement of the bone, and a susceptibility to the influence of atmospheric changes; but neither of these, as the experienced surgeon well knows, would argue an imperfect cure.

CASE II.—In 1776, I was consulted in the case of a young woman of twenty-seven, who for some months had suffered from a large swelling, extending from the angle of the lower jaw to the zygomatic arch, and accompanied by dull and deep-seated pains. As such symptoms sometimes attend the difficult dentition of the third molares, and since in this case the second molar stood unusually far back, I urged its extraction; but the operation proved fruitless. In February of the next year she suffered much from acute pains. The jaw was painful to the touch, and the first molar was loose. I removed it, and found its fangs much eroded, the socket carious, and a considerable cavity formed by the loss of the inner structure of the bone. M. A. Petit, whom, from the grave nature of the case, I was induced to call in consultation, pronounced it, unhesitatingly, *spina ventosa*, a disease the cure of which is both tedious and difficult. He assumed the general, I the local, treatment.

By an incision along the gum, I penetrated the cavity, gave vent to a bloody ichorous matter, and traced the caries as far as the first bicuspid. I first applied dressings of dry lint, and afterwards stimulating pledgets to excite suppuration, touching

* An ointment composed of vinegar, honey and verdigris.—*Tr.*

the carious bone with mercurial water. An external fistula was formed from the coronoid process to the zygoma, which I treated with a tent saturated in vitriolated solution of corrosive sublimate, avoiding the use of the knife, for fear of injuring the Stenonian duct.

March 23: The carious bone commenced to separate, the fistulous opening had sloughed, and the patient was doing well, when from the officious meddling of others, I was forced to abandon the case, rather than give my consent to measures proposed, which I deemed highly injurious. Of the future history of the case I am altogether ignorant.

CHAPTER FOURTH.

WOUNDS AND FRACTURES OF THE LOWER JAW.

AVOIDING all general remarks, I pass at once to the consideration of wounds and fractures of the lower jaw, as caused by falls or blows, by cutting or bruising instruments—the circumstances of the accident determining the extent of the injury, and, in part, the mode of treatment.

CASE I, (Scultet.)—In 1634, a Swedish sergeant-major was wounded by two musket balls, which entered just below the right ear, wounded the tongue, and escaped at the other side, injuring the tonsils and the molar teeth. There was much hemorrhage, syncope and subsequent fever. I administered a cordial potion for the relief of syncope, a cooling enema which caused three stools of dark bloody matter, and an astringent gargle for the arrest of the profuse hemorrhage. I then applied, internally as well as externally, a sponge saturated with a styptic solution. On the next day I drew four ounces of blood, for the relief of pain in the head and side, and gave a drink of barley-water, by means of a funnel. The third day he made signs—for speech was impossible—expressive of severe pain in the temporal muscle; a warm poultice was accordingly applied, and nourishment was still given with the funnel. The fourth day he pointed to the uvula as the seat of great pain, and on removal of the dressings a very offensive discharge escaped, occasioned by the presence of a spicula of bone, which was forthwith extracted. The enema was repeated for the relief of constipation. On the fifth and sixth days there was an improvement, and on the seventh the patient began to lisp, complaining still of pain within the mouth, from which a small fragment of bone was again drawn, and dressed as before with a digestive. On the eighth day I gave some oil of sweet

almonds, for the correction of colic symptoms. On the ninth day the treatment of the case ended. We remark in the management of this case, a judicious attention to the progress of nature, often more availing than hasty operations.

CASE II, (Chabert.)—A soldier came to the hospital, with caries of the external surface of the central part of the right lower jaw, the result of a wound received by a foil, some six years previously. There were three fistulous openings, tumid but not discolored. These fistulas I cauterized with vitriol—which I found to be less painful than corrosive sublimate*—being careful to keep them open by stimulant pledgets, renewed daily. My treatment necessarily increased the swelling of the face, but after the fifteenth day, when I withdrew, without pain or difficulty, the entire sequestrum of bone, the cure progressed speedily and without accident.

We will often find that the cure is retarded by the presence of some small spicula of carious or necrosed bone. In such cases we should cut down and remove all such fragments, otherwise the external wound cannot heal completely.

CASE III, (Wepser.)—This patient was wounded in 1684, by a pistol ball that entered below the right ear, passed above the palate, tore away a portion of the frontal bone above the left eye, and caused protrusion of that eye, with laceration of the cornea. After recovering from the fainting fit immediately following the accident, he dragged himself to the nearest village, where he had several attacks of syncope. Blood flowed from nose and mouth, but not profusely; and though he was at first unable to open his mouth, his appetite soon returned, and his bowels were quite regular. The patient, at first treated domestically, fell subsequently into the hands of a regular and experienced surgeon. The wound above the eye, and that near the angle of the jaw, he treated with digestives, preventing the lips of the wounds from closing, by the introduction of medicated tents, until all fragments of bone were discharged, and suppressing proud flesh by means of burnt alum and lapis

* The union of the three openings, by means of the knife, would have been a still less painful and a better method.

calaminaris. Towards the close, dry lint alone was used in dressing these wounds, and throughout the whole treatment a simple pledget of lint was laid upon the eye, to keep it in its proper position. The discharge from the eye was less than from the wounds above or below. The one below did not heal completely till the end of eighteen weeks. I saw this patient in 1685, at Heidelberg, perfectly cured and in good health.

CASE IV, (Wepser.)—In 1683, a sportsman from carelessness received the full charge of his gun, containing two balls, below the right side of the lower jaw. It penetrated the right orbit, and passed out through the parietal bone, anterior to the lambdoidal suture. His senses were not impaired, and the movements of the limbs were free and voluntary, till the evening of the fourth day, when he commenced to sing. Several hours before his death his speech began to fail, but he was perfectly conscious. Still later, he tossed his arms from side to side, had short and convulsive twitchings of the arms and hands, and just before the fatal hour he became delirious. A post-mortem showed that the balls had passed through the cerebral substance. Although such injuries are almost necessarily, and for the most part instantaneously, fatal, yet we have some well authenticated cases, ancient and modern, where the brain has been implicated and yet recovery taken place. It is a point deserving of much attention.

CASE V, (Baïerus.)—A miller, imprudently approaching too near the arms of his wind-mill, was caught up by the sleeve, and had his arm dislocated at the shoulder, his clavicle broken, and, in some singular way, the anterior half of one side of the lower jaw torn completely away, with the investing flesh and integument. By perfect repose and the use of poultices, we aided nature in the almost unhopd for cure of this horrible accident. A callus was formed, replacing the lost bone, and the soft tissues were renewed, except near the angle of the mouth. By the aid of slight scarification, liniments and an incarnative,* this deficiency was filled up, and all the operations of the mouth restored, except mastication on that side.

* Applications used by the old French surgeons, under the idea that they helped to replace lost *flesh*.—*Tr.*

CASE VI.—A servant of M. Langlois fell from a ladder and struck his chin upon the corner of a mantel, fracturing the lower jaw at the symphysis. I found the patient in a state of syncope; after recovering him from which, I proceeded to set the fractured bone. The central incisores were separated about three lines apart. As the teeth were firm and sound, I bound them with a twisted ligature, thus bringing the ends of the bone together, and retained them firmly in place by a bandage of three fingers' breadth, passed around the back of the neck, with the folds crossing each other at the chin. The patient was bled twice in twenty-four hours. Camphorated brandy was the only medicine used, and for diet, broth, cream, rice and baked apples. On the twenty-first day the bandage was removed, and on the forty-seventh, reunion was complete; still I cautioned the patient against eating too solid food for at least two months to come. The peculiarity of this case is the absence of all wound of the soft parts, and the uninjured condition of the teeth.

CASE VII.—Jan. 5th, 1760: Pierre Commarot, aged eleven, was struck on the face by the lever of a screw press, which gave way in the Hospital de-la-Charité at Lyons. A gash was inflicted, extending from the chin two inches to the right, and the bone was laid bare. Two sutures were necessary to keep the lips of the wound in contact, but the restlessness of the boy prevented union by first intention and retarded the cure. The threads loosened on the fifth day. The wound was dressed with balsam, the edges brought closer by the aid of adhesive strips, and the fungous granulations treated with brown ointment, and afterwards with mercurial solution. Feb. 5th: the proud flesh was cut away and then touched with mercurial solution. Feb. 30th; the cure was completed.

I shall briefly notice here a peculiar and most distressing affection of the face, for which has as yet found no permanent and scarcely any temporary relief. It is characterized by most acute and excruciating pains over the whole side of the face; at the same time the general health seems very good, and all parts of the face may be free from any apparent derangement.

Every variety of remedy has been tried that art could suggest. Baths, tonics, sudorifics, narcotics, setons, blisters, cautery, neurotomy of the facial nerve—sometimes giving not the least relief, at other times only aggravating the pain. Some, regarding it as a purely nervous attack, have administered all kinds of antispasmodics, such as the animal oil of Dippel and the like, but with no permanent benefit. [This disease, well known as *tic-douloureux*, or facial neuralgia, is still, as in the days of Jourdain, an *opprobrium chirurgiæ*. Neurotomy, large doses of sub-carbonate of iron, and the local application of strychnine, have all been much tried in later days, but with only partial success. Our first care should be to ascertain, if possible, whether the affection be not owing to the irritation of some dental disease. If so, we cannot hope for a cure till we remove the offending cause.]

CASE VIII, (Manget.)—A Franciscan monk, named Carvi, aged twenty-three, short, thin, sallow, and of bilious temperament, had for ten years suffered from an intolerable pruritus of the chin and lower lip. The desire to scratch the seat of the disease was irresistible and incessant, but the relief was merely temporary, and the integument had become, by the friction, quite callous. Purgatives, sudorifics, caustics, had all been used in vain. It had even been proposed to lay bare the bone, and to scrape it and penetrate to the marrow, under the idea that there lay the seat of the disease; but his superiors in the monastery would not consent to so formidable an operation, though the patient himself was quite willing to submit to anything that might rid him of his intolerable torment. At Naples, Padua, Venice and Rome, he consulted the best physicians, but all agreed in pronouncing his case incurable.

Manget does not concur in this opinion, but thinks that the case, being one of purely nervous origin, might have been successfully met by the use of antispasmodics, associated with a tonic course of treatment.

CHAPTER FIFTH.

DISEASES OF THE LIPS.

BESIDES their muscular substance, the lips have a number of small glands or follicles, in consequence of which structure they are liable to those diseases peculiar to glandular bodies, as well as to those which attack fleshy parts. According as the secretion of these follicles is acrid or corrosive, scant or abundant, we shall find the lips more or less liable to disease in some form. The disease known as *cheilocace* or "swollen lip," is simply an enlargement and consequent projection and separation of the lips, very disfiguring but not at all dangerous, unless irritation is set up. It is said to be very common in Ireland, prevailing often epidemically, and almost confined to children between the ages of four and five years. It rarely attacks both lips at the same time, and oftener the upper than the lower. The swelling is very great, hard and red, but not inflammatory or suppurative, although commonly associated with an apthous condition of mouth.

In most cases it disappears spontaneously, or with the help of very simple remedies. But if neglected or maltreated, it will sometimes assume a very stubborn character, recurring with increased virulence when a cure is almost attained, and in some forms of epidemic proving incurable and even fatal.

To this latter form some English authors have incorrectly applied the term *cancrum oris*. In the deep fissure which separates the tumid lip from the gum, there frequently collects a sanious matter, which will excite irritation and even ulceration of the lip. The cicatrization of an ulcer at the commissure of the mouth, will occasionally produce partial adhesion of the two lips, and permanent contraction of the size of the orifice.

A single gland or follicle may become diseased, and give rise to a globular tumor, varying in its character and progress in different cases. Scaly ulcers, depending upon constitutional vitiation, cannot be cured by topical remedies alone. If more general means be not used, there is danger of their extension to the face, and degeneration into malignant disease.

Besides these special affections, the lips are liable to abscess, scirrhus, fungus, &c., to injuries of different kinds, and to congenital malformation.

§ 1.—*Ulceration of the Lips.*

This must not be confounded with apthæ or excoriation, dependent on local causes. I have, in the chapter on "Ulcers of the Palate," explained the connection between ulcers generally and vitiation of the humors, with remarks upon the general treatment necessary; I shall therefore proceed at once to particular cases of ulceration of the lips.

CASE I, (Wepser.)—A young girl, aged twenty-two, tall and fleshy, with whom menstruation had not yet commenced, was afflicted, in 1685, with an apthous ulceration of the palate, for which sage, vinegar and brandy were given. Subsequently the lip and right ala of the nose ulcerated, and a small *psora* appeared above the eye. In Feb. '86, I found the whole upper lip in a state of ulceration, the surface granular and bleeding very readily; the edges of the ulcer not raised or inverted; the space between the lip and nose not affected, but the left ala ulcerated inside and out; the *psora* dry. Against March I cured all these ulcers by the use of suitable remedies, and by means of emmenagogue decoctions excited the menstrual flux. To the delay or suppression of this, we may attribute the above-mentioned accidents, aided perhaps by habits of intemperance.

CASE II, (B. Timæus.)—A sportsman, who in the fall was annoyed with a chapped and fissured lower lip, continued the chase during the winter; in consequence of the irritation and exposure from which, the lip assumed a decidedly malignant appearance. He tried various local and general medicines, but

to little purpose. I advised the removal of the tumor by operation. It was performed by M. Henning, a skilful surgeon, thus :—drawing down the lip with the left hand, he made three incisions with a sharp pair of scissors, (a bistoury would have made a neater, cleaner cut, and been in all respects preferable,) one to the right, a second to the left, and a third just above the depression of the chin. The wound healed without deformity, the annoyance caused by the contraction of the lips wore off in time, and none of the functions of the mouth were in anywise impeded.

CASE III, (Baile, Journ. of Med., vol. xxvi.)—A peasant, named Vial, had for ten years a chancrous ulcer of the lip, which spread over a large portion of the right cheek, and had also a point of discharge at the symphysis. A surgeon of eminence in Provence, to whom in his extremity the patient applied, reflected upon the difficulty of performing any operation, and satisfied himself with giving some styptics to arrest, as he said, the progress of the ulcer. Small cancerous tumors may possibly be eradicated by caustics, such as the concentrated vitriol used by Boerhaave, but we cannot rely upon them for the cure of extensive malignant ulceration. The knife, where practicable, is the only sure local agent.

The patient was further assured by the surgeon, that the disease was in the blood, and that consequently it would be hazardous to close up this outlet of morbid humor, lest by metastasis some graver mischief should ensue. Two other surgeons pronounced it, under the mistaken name of *noli-me-tangere*, to be incurable. And in truth this neglect of serious ulcers, under the idea of their incurability, is often the real cause of their assuming a malignant character.

Finding the patient in this dilemma, I determined upon my course. The extract of hemlock—a discovery attributed by M. Chomel to M. Reneaume, a physician of Blois—had been repeatedly used with success, for cancerous tumors and ulcers. I, therefore, prepared my patient, during fifteen days, by repeated doses of hemlock combined with cooling diluents, and then proceeded to the removal of the entire ulcerated mass with the

knife. I was compelled to cut away the commissure of the lip and a large branch of the maxillary artery, making my operation tedious and difficult, but it proved quite successful and was followed by no untoward accident. Suppuration began on the third day, at first thin, but in a few days quite laudable. Sutures were used to bring the lips of the wound together, and a plaster of hemlock was applied. Balsamic dressings were resorted to, and basilicum, with red precipitate for the suppression of fungus, also *pierre infernale* for the destruction of proud flesh. In six weeks the cure was completed, the patient meanwhile making diligent use of a detergent camphorated gargle. The extract of hemlock was continued for a long time after this period. Sixteen months after the operation, the man was in the enjoyment of excellent health, with no return of the disease and no deformity, except a slight contraction of the mouth and the presence of several cicatrices on the cheek and chin.

The internal treatment directed by M. Bayle, was very judicious, but by comparison of this case with the one from Timœus, it will appear that the cure was really dependent upon the operation. Sutures were used in both cases. Some excellent remarks upon the use and abuse of sutures may be found in a paper by M. Pibrac, in the *Memoirs of the Royal Acad. of Surgery*. In vol. xii of the same memoirs, may also be found some useful hints in the treatment of hare-lip without sutures.

CASE IV, (C. Solingius.)—Galien teaches that no part of the body is exempt from liability to cancerous attack; yet many cases of reported cures of cancer, bear, in point of fact, no trace of malignant action. Instance the following:

A young woman, enciente and of questionable character, had a violet colored tumor on the lower lip, the size of a bean, which was pronounced malignant, and was excised by some surgeon with scissors. We saw it immediately afterwards but could find no evidence of malignancy. It was in our opinion, attributable simply to an hypertrophic action of the nutritive vessels, caused by the irritation of some diseased labial gland

or follicle. The hemorrhage was arrested by vitriol; the next day the wound was dressed with syrup of dried roses, and was in a short time completely cured.

CASE V.—A gardener of the Faubourg St. Marceau, consulted me about an ulcer on the inner side of the lower lip, about the size of a French t'opence. Its gradual increase, in spite of all treatment, together with its color and general appearance caused Mons. A. Petit as well as myself to suspect cancerous disease. On making a very careful examination of the mouth, I found that there was great irregularity in the arrangement of the teeth, and that a central incisor longer and more prominent than the rest, came against the lip just at the point of the ulcer. Assured that I had discovered the cause of all the trouble, I extracted the offending tooth and made a speedy cure with the help of detersive and healing gargles.

Had this simple case been treated as if malignant, it might, especially in one of a bad constitution, have really taken on such a character. I shall now pass to a few cases of genuine cancer.

CASE VI, (Marchetis.)—I cured an open cancer of the lip in an old man of eighty-four, which was as large as a pullet's egg. I had pronounced it incurable, but at his earnest entreaty I consented to extirpate it, which I did with a razor. The hemorrhage was profuse, but after allowing about ten ounces to escape, I easily arrested it with an astringent powder. Examination showed that all the disease had been cut away. I dressed the wound with camphorated ceruse and for three years there was no recurrence of the complaint. At the end of that time a cancer attacked the pharynx and ultimately proved fatal.

CASE VII.—Is from the same, given without detail. The cancer was on the lower lip as large as a pigeon's egg, and was cured in the same way as the above. Four years after he died of malignant fever but had had no return of cancer. The man was about forty years of age, of a melancholic temperament. He was directed to take a purgative every spring and fall after the cure of this cancer. In the first case the cure was not rad-

ical, else would there have been no recurrence of the disease. In the second, death from another cause did not give sufficient time to prove how far the disease was removed from the system. Again, may not the "malignant fever" which proved fatal, have had some connection with the cancerous virus, called thus into action by the extinction of the local disease? Do we not find phthisis, pneumonia, hepatic, and mesenteric engorgement, &c., following at greater or less interval, the removal of cancers: [but it cannot be shown that they therefore stand in the relation of cause and effect, or even that the operation predisposed to these diseases,] and the disease has been known frequently to recur in the same or in other parts many years after a first operation. In view of all this, we cannot but regard the cure of cancer as extremely uncertain.

CASE VIII, (Manget.)—A gentleman of Montpellier had a small tumor on the upper lip which increased daily and finally became cancerous. He applied to me for relief. I gave a strong emetico-cathartic, which promptly lessened the size and painfulness of the tumor. A fortnight after I repeated it with the same good result and meanwhile directed warm baths thrice a week, leeches, and an issue in each arm with the daily use of butter-milk.

All local remedies served but to irritate, except the extract of black hellebore and the ointment of "green frogs."* Under the continued use of these the tumor suppurated, gradually diminished, and finally disappeared.

In the absence of data to prove that the above tumor was really cancerous, we are led, from the readiness with which it was dissipated to doubt the fact. Nothing, as it seems to us, can destroy the germ or root of cancer but the knife, followed in some peculiar cases by caustic or cautery; nor can these always avail, especially where the system at large is involved, to say nothing of the difficulty and even impossibility in some cases of reaching all the minute fibres of the diseased mass; and unless this be done we can entertain no hope of a cure.

* Jourdain gives the formula of preparation of this strange ointment, but as we deem it more curious than useful, we have taken the liberty to omit it.—*Tr.*

How many would languish and die after the extirpation of a cancerous tumor, but for a judicious after treatment and regimen. The benefit of extirpation is greater in cancer of the breast than that of the lips, tongue, nose and eyelids—take a few examples.

CASE IX, (Titius.)—A locksmith had a cancer very successfully removed from the lower lip; but at the end of a year he was seized with a quinsy, which examination showed to be dependent on a cancer of the pharynx and part of the larynx. The resources of art were in such a case unavailing, and the patient died under the fearful and painful ravages of the disease.

Again in the case of a sportsman who had had a cancer removed which covered the entire lower lip, two years of good health were enjoyed. At the end of this time, notwithstanding the strictest regimen, the disease reappeared upon the tongue, tonsils, palate and gums, resisting all applications, presenting a truly horrible spectacle, and causing a most painful death.

Examples might be multiplied to show that well marked cancer of the lip is incurable, let ignorant charlatans say what they will to the contrary. Felix Plater gives the case (Case X) of an individual who had two tubercles of the lips one of which was ulcerated, with hard and inverted edges. He used a caustic wash of arsenic and verdigris but it failed to arrest the disease. Palliative treatment is, under such circumstances, the wisest. Though it may be dangerous to attempt to cut off the head of this hydra, we may safely and successfully strive for a time to moderate its ravages.

§ 2.—*Special Tumors of the Lips.*

CASE I, (T. Bartolin.)—I visited, with a celebrated physician, an infant six months of age, who had a tumor hanging from the upper lip, resembling in shape, color and size, a cherry, which it was asserted had been thrown playfully at the mother during her pregnancy.* The operator passed a thread through the

* The effect of the imagination on pregnant females is well explained in a Dissertation, by James Blundel, a physician of London, who very peremptorily

tumor and then excised it with a bistoury. When dissected it was found to be glandular in its structure. In fact, as has been before stated, these tumors have their origin in disease of the labial glands.

In these congenital mal-formations, we seek to arrest the morbid growth, in a way least likely to prove injurious to the infant. The blood vessels of the lips are subject to an enlargement which gives rise to dark and bloody tumors called *varices*, of which the following is an example.

CASE II, (Manget.)—I was called once to an infant six months old, which had on the lower lip, a dark, bloody, soft and irregular tumor, somewhat prominent and about the size of a land-turtle's egg. The pain and difficulty which the child experienced in taking the breast—in fact it could not seize the nipple, but the nurse was obliged to spurt the milk into the mouth—that there was much danger of starvation; under these circumstances, I ventured to remove the entire tumor with a red hot scalpel. The hemorrhage was profuse, but I succeeded in arresting it and cured the case in ten days, sustaining the child meanwhile with the milk of its nurse. The mother, it may be well to observe, was of a full, sanguine habit.

The same author speaks of having seen, in 1641, a more remarkable tumor in an infant of the same age. It was on the lower lip, as large as the child's fist, violet colored, with vessels ramifying over its surface. Strange to say, the tumor did not give any pain or prevent the child from sucking. The temperament of the mother was melancholic.

Manget gives other instances of this disease in children at the breast; also in persons of mature age, and mentions among others, a counselor, who had a tumor on the upper lip, near the commissure, soft and flexible, and about the color of a half-ripe mulberry. At first no larger than a juniper-berry, it was, when I saw it, the size of the weight usually attached to a spindle. This tumor was attributable, in my opinion, to an influx of morbid humor. I have often dissipated similar ones by using dregs of vinegar, quick-lime and similar applications.

overthrows the many ridiculous statements of this kind, which we constantly, even at this day, meet with.

Persons not unfrequently wound the lips with the teeth, in mastication or otherwise. Ordinarily the simple bruise or excoriation demands no attention, or perhaps merely a little honey and lemon juice. But if the wound is a deep one, and the glands much injured, it may give rise to symptoms, the more singular from the fact that the patient may have forgotten, and it may not readily occur to the surgeon, the real origin of the affection. The following is an instance:

CASE III, (Mnysk.)—A young man came to me with a round, movable and painful tumor of the lower lip, about the size of a marble, and not differing in color from the adjoining parts. It had followed the accidental biting of the lip with the teeth, by which, it is evident, he had wounded a small artery, and caused an influx of humor to some one of the labial glands. As topical applications could not be very conveniently made, I at once cut away the tumor with a knife, and healed the wound with honey of roses.

A blow, bruise, or the habitual compression of the lip by the teeth, common to some persons, may cause a node or hard tumor. Albucassis speaks of this in his Surgery, and recommends the knife, followed by burnt alum. Some have used oil of vitriol, others the actual cautery, but the knife is the surest and least dangerous, not only preventing any cancerous tendency, but destroying its incipency.

CASE IV, (Meeckren.)—James Heyblok had for some years been much annoyed by a node on the lower lip, about the size of a bean. I proposed its removal, and for this purpose I seized the lip between the thumb and forefinger of the left hand. I drew it outward, made a crucial incision down to the node, and then carefully raised the integument and dissected it out. I applied burnt linen as a styptic for the arrest of the hemorrhage, and in the after treatment used simply honey with spirits of wine.

Besides these nodes, the lips are subject to a vesicular eruption, which some have erroneously classed among cancerous affections. They are caused by the extravasation of lymph from vessels which have been wounded or irritated by the teeth, or by other causes. All that is requisite for their cure, is to

clip them with scissors, and apply a mixture of honey of roses and brandy. They sometimes, however, leave behind a permanent and painful induration. The procedure advised by Meeckren in this case, is to seize the indurated portion by two threads, which have been passed through it, for that purpose, with a curved needle, and then, with one sweep of the bistoury, separate it from the healthy part, dressing the wound with styptics and balsams. We can see no good reason for the painful operation of introducing the threads; nor why, in fact, he should not operate in this as in the other two cases.

CASE V.—In 1771, an individual consulted me about a vesicular tumor of the lower lip. It was most prominent at the centre and inner part of the lip, the skin not discolored, and the base indurated. The tumor was subject to sudden increase and diminution; but as from time to time it burst, and was a source of but little annoyance, the patient gave himself not much concern, until at length the parts around became painful and inflamed. He then sought M. A. Petit, who called me in consultation. I opened the tumor, found its cyst adherent to the parts around, introduced a piece of caustic potash, and in this way seemed to have accomplished a cure. But in three weeks it reappeared. M. Petit and myself then decided, fearful of the possible existence of some malignant action, to remove the cyst entire, which was done with a keen scalpel, and the wound dressed with balsam of Arcæus and red precipitate. The wound cicatrized in fifteen days, and to this day there has been no recurrence of the disease.

We may see how much more effective the knife proved in this case than escharotics. Venomous substances will sometimes produce disease of the lips, as in

CASE VI, (Fairfax.)—A child, whilst throwing stones at a toad, had some of the blood of the crushed reptile thrown accidentally on his lip. Swelling ensued, and from neglect, became enormous and disfiguring. In such cases the parts should be bathed in a decoction of theriacal, and covered with lint pledgets saturated with the same.

This case is not surprising, when we reflect upon what some-

times happens from drinking out of the same glass with a person having a diseased mouth. The lips are liable to excrescences of various forms and characters, of which I shall give a few instances.

CASE VII, (Vincle.)—A poor seamstress applied to me for relief of a singular tumor of the lip, from the ulcerated centre of which sprang a fungus which covered the entire lip, interfering greatly with her occupation. I at first pronounced excision of the fungus to be the only remedy, but at her urgent entreaty to try some other expedient, I bound it tightly around the neck with a strand of horse-hair, directing her to tighten the knot each day—gradually, for fear of inducing gangrene—a painful operation, and one which caused many sleepless nights. After the fungus had been thus removed, I completed the treatment by the use of strengthening ointments.

Marcus Donatus gives a case of fleshy excrescence, called by him *hypersarcosis*, in which he strongly recommends the horse-hair ligature; for if, as he says, the circulation be thus arrested in the tumor, it must necessarily dry up and become detached.

CASE VIII.—In 1774, a little girl was brought to me, aged eleven, with a small pedunculated fungus at the right commissure of the mouth. I caused it to slough off in a few days, by tying a thread round its neck. But in eight or ten days it returned, larger than before. I then cut it off, and applied a strong caustic, but in about six weeks the part began gradually to inflame and give pain, and notwithstanding various applications, a dark irregular fungus was formed, about as large as a pea. I now determined to cut out the fungus, with every vestige of induration. I readily arrested the hemorrhage, used a dressing of dry lint, then one of balsam and red precipitate, and afterwards, as the granulations assumed a healthy tone, a simple healing lotion, trusting to the parents to see that the dressings were kept in place. No recurrence of disease took place, and the retraction of the corner of the mouth, which was unavoidable, gradually disappeared as the patient became older. In this case the delicate roots of the pedicle undoubtedly pene-

trated the adjoining parts, and hence the failure of the two first operations.

Carbuncle may attack the lip, either in its simple form, or in its more malignant type, tending to gangrene. Both kinds consist of a hard, red and elevated tumor, with a large central pustule, surrounded by smaller ones, which pass into black or ash-colored scabs. The simple carbuncle may be readily cured; the malignant or pestilent carbuncle often resists every effort of art, and proves fatal.

CASE IX, (Variola.)—I was called, on the second day of the disease, to a case of carbuncle of the lower lip, in a young and vigorous patient. After copious depletion, I directed a cataplasm of yolk of egg, green rue, scabiosa, dried figs, yeast and pepper. Separation of the diseased mass took place in three days; I then directed a plaster of calendula, &c. The extract of calendula is excellent in the treatment of pestilent bubos. After the separation of the eschar, I used an ointment of calendula, scabiosa, wormwood, mint, &c., which, with revellents to adjoining parts, completed the treatment. There remained some slight deformity of the mouth.

We are constantly reminded, by daily experience, of the effect which changes of temperature and moisture in the atmosphere exert upon our bodies—acting upon the cutaneous and other secretions—rarifying the fluids of the body, and giving rise to inflammations—or, under the action of cold and moisture, causing internal congestion, &c. We shall give in illustration, the following:

CASE X, (Hottinger.)—A young girl, aged sixteen, tall and slender, was seized, after a promenade on a damp cloudy day, with swelling of the lips which soon became as large as sausages.

On close examination it was found that she had recently been healed of a cutaneous eruption and had for some months suffered with amenorrhea. Here was a sufficient explanation of the labial swelling, and accordingly our treatment was directed to the purification of the fluids of the body, the restoration of the catamenia, and the local application of some discutient.

In four days the tumefaction had disappeared, but returned again at the end of a month. This time it was more promptly arrested, but again it recurred. It was in vain that we tried to restore regular menstruation: the patient was reluctant to take medicine, and the case was therefore dismissed. As the uterine function became more natural, these peculiar symptoms doubtless disappeared.

§ 3.—*Hydatids of the Lips.*

This name has been given by nearly all writers, ancient and modern, to subcutaneous adipose tumors of the lips, and to phlyctenæ and vesicles, resembling those which are caused by blisters, burns, cups, &c. Bidloo, however, in his surgical dissertation, describes hydatids quite differently. We shall attempt a concise exposition of his views.

Hydatids may be considered under three classes. The first consists essentially, in dilatation of the intervalvular spaces of the lymphatic vessels, and will vary in shape and size according to the position, strength, softness and flexibility of these vessels, and the force of the lymphatic circulation.

The second class of hydatids is seated in the parenchymatous, or capillary tissue of the body, and would seem to originate in some abnormal obstruction of the circulating fluid destined for nutrition. The fluid thus obstructed, forming a centre of attraction for the still further deposit of morbid secretion, assumes, in consequence of the pressure exerted on all sides, a rounded glandular structure; having a membranous cyst and sometimes enclosing many of the first class of hydatids. These cysts, assuming also an hypertrophic action, tend to multiply and form clusters, adapting themselves to the shape of surrounding parts, or becoming pendent under the influence of gravity. In shape, they are mostly oval or spherical. This second class is marked by an abundance of blood vessels not seen in the first.

Bidloo proposes, compression, ligature, scissors, the hot iron, and especially the knife, in the extirpation of these two classes

of hydatids, in preference to the use of gold or steel needles, or escharotics, which he regards as unsafe.

The third class, says this author, usually attack the inner side of the lips of scorbutic persons and deserve special notice. At first livid and painless, they subsequently become shrivelled and pale, then ulcerate and take on the appearance of a flattened tumor. If not promptly attended to, they cause gangrene of the lips and cheek, necrosis of the bone, and ultimately death.

That the disease springs from some disturbance or obstruction of the nutritive system, is evident from the precursory symptoms, swelling of the face with a dull lifeless expression, deranged digestion, with loss of appetite and strength. The tumor instead of passing into the pustular form, is converted in a few days into a foul ulcer with pale surface and hard edges, not bleeding unless deeply scarified.

This disease requires prompt treatment. Deep scarification must be made with the lancet and blood freely discharged, vitriol applied for several days to the surface of the ulcer, and internal remedies given. If the disease still advance, the parts must be injected with syrup of celandine, and aromatic fomentations applied to the cheeks and lower jaw, carefully avoiding brandy, tincture of myrrh, of aloes, and the like for fear of rendering callous the edges of the ulcer.

Bidloo reports the cure by these means, of a lad five years old, who was suddenly affected; the tumor commencing the size of a pin and in two days covering the lip to the extent of an inch.

CASE I, (Bidloo.)—A child, aged eight, of Jewish birth, who had been given over by his surgeon, six days after the onset of the disease, was cured by me in the way above detailed. The case was not exactly analogous to the preceding. Almost the entire left superior maxilla was lost by necrosis, and the extreme fetor justified the use of spirits of wine. Surprising to tell, the deformity after cicatrization was inconsiderable.

CASE II, (Bidloo.)—The child of a tailor of Amsterdam, aged nine, had so severe an attack of this disease, that in five

days the lip was completely invaded by a livid fetid ulcer. I tried various remedies and slight scarification, but without effect. Then with the scissors, I cut away all the diseased part, and speedily healed the wound with the ordinary remedies. So much of the lip was lost however, that the child could not retain the saliva—an accident which subjected me to much remark and animadversion. To remedy this, I dissected up from the chin so much of the lip as was left, raised it and attached it by ligatures at the angles of the mouth. The operation was perfectly successful. I should observe here that this disease is quite common in armies during damp autumn weather.

Bidloo, after remarking on the difference between sphacelus in other parts of the body, and this disease, which though describing as a species of hydated, he treats as sphacelus, says that we must also be careful not to confound it with virulent eroding ulceration, which is different in its origin, progress, symptoms, and cure. He gives it the name of hydatid, because the lymphatic and nutritive vessels are primarily affected.

When the veins and arteries investing the lymphatic vessels become congested, so as to interrupt the proper action of these latter, a tumor ensues which we may term *hydatico-sarcoma*. Externally, it is of a livid red hue, but within, preserves its hydatid appearance. Some have erroneously termed such tumors cancerous, but cancer is a disease of conglomerate glands, and not of lymphatic vessels. I shall close these valuable remarks from Bidloo, by giving a case worthy of study.

CASE III, (Bidloo.)—A man, aged twenty-seven, had on his lower lip a number of hydatids, which were very painful, and prevented the closure of the mouth, besides making his appearance hideous, by the exposure of the teeth, the enlargement of the lip, and the constant flow of the saliva. After trial of many remedies, he placed himself in my hands. With the knife and scissors I succeeded, after a tedious and very painful operation, in removing all the tumors, with every root and fibre. The number was considerable, but in size they did not exceed a bean. I arrested the hemorrhage by compresses of sponge and lint. The next day I found the lip pendent and without

power of motion. This I remedied by suitable apparatus, and in time, under the use of proper dressings, restored the parts to their proper action.

My friend, M. Solinge, says Bidloo, rejects the scissors as useless, and to my great surprise, gives the preference to the needle and actual cautery. The true plan in all these cases, is to seize the lip, at the outset of the operation, between the thumb and finger, and not to quit your hold till its completion. If, from fatigue, the operator is obliged to stop, it is necessary that he should carefully cleanse the cheek and lips, and examine closely, that no vestige of disease may be left. Much care is to be exercised in restoring the lips as far as possible to their natural position. Where either commissure is involved, there will almost necessarily be some contraction of the mouth in cicatrization, but this is of small moment compared with the removal of the disease.

Hydatids of the lips are not to be confounded with bruises occasioned by the teeth. These become quickly livid and painful, but the pain is brief, and the color is soon reabsorbed, especially if aided by stimulant applications. If there has been any laceration of the lip, it will be necessary to clip away the loose shreds still adherent, and wash the wound with litharge water, or with the lotion of M. Goulard. If, in the progress of cure, any teeth prove a source of constant irritation, it will be advisable to wrap them with some soft substance; but if from peculiarity of position they still continue to irritate and excite disease, their extraction may be necessary. In all cases of disease of the lips, it behooves us to consider well the cause of the malady, the age, constitution and hereditary predisposition of the patient.

CHAPTER SIXTH.

DISEASES OF THE CHEEK.

THESE diseases, whether arising from dental affections, or from other causes, internal as well as external, are sometimes productive of very serious consequences. The cheeks not only help to give form and beauty to the face, but are indispensable to the proper performance of speech and mastication, and hold, moreover, an important relation to the salivary ducts. The salivary fluid, secreted by the parotid, submaxillary and sublingual glands, forms with the food, after mastication, a kind of thickened broth, which readily passes through the œsophagus, and answers, doubtless, some salutary purpose in the stomach, assisting in the assimilation of the food, and thus aiding, essentially, in restoring that waste which is constantly going on in our system. It also keeps the mouth, with all its parts, moist and supple, causing, either by its suspension or excess, much embarrassment to these organs.

The cheek is exposed to all those injuries and diseases of which we have treated, abscess, fistula, ulcer, carcinoma, &c. blows, incisions, lacerations, and such like, which may result in more or less loss of substance. The important and complicated relations of its muscular structure, render a skilful hand and an accurate anatomical knowledge, necessary in the performance of the requisite surgical operations.

§ 1.—*Abscess.*

The necessity for a prompt discharge of the purulent matter of buccal abscess is imperative. Its spontaneous discharge will be either internal or external, accordingly as it approaches the inner or outer side of the cheek. I proceed at once to a few cases of abscess of the cheek.

CASE I.—An individual who had suffered several attacks of alveolar inflammation from carious teeth, sought my advice respecting a tumor in the substance of the cheek, which following the last attack, had remained for some months hard and insensible, but which had recently begun to give pain. He had for some time used various emollient and discutient poultices, and I found the skin red and painful to the touch. I first extracted all the carious teeth and then sought to mature the abscess by cataplasms. The third night was passed in great restlessness by the patient, and on the next day I gave issue to the matter, applied dry lint, then a mild digestive, and completed the cure by the usual vulnerary dressings.

Many similar abscesses I have cured in precisely the same way. But the purulent matter will not always thus seek a direct external outlet. It sometimes infiltrates the cellular and glandular tissues, greatly impeding the action of the muscles of the jaws, and urgently demanding evacuation. It must not be confounded with parulis or gum-boil, though often arising from the same cause. All carious teeth should in such cases be at once extracted.

CASE II.—A young lady living in a part of the country where she could find no competent person to extract several badly decayed teeth which had given great annoyance, was at length attacked with inflammation and parulis; venesection, gargles, poultices, figs, &c. were promptly resorted to. The tumor burst, and much matter escaped; the swelling subsided, and the patient thought herself cured, though she could still feel with the tongue a hard tumor in one part of the cheek. This tumor afterwards enlarged, filled the whole space between the cheek and teeth, and was so much irritated by the friction of these latter, that the patient, dreading the possibility of cancer, came to Paris and consulted me.

I found the fistula in the gum still open, though too small to allow the free escape of matter, and detected distinct fluctuation in the cheek. I first extracted the two upper molares, which were greatly decayed, and then carried an incision from the said fistula into the buccal tumor, gave vent to a large

quantity of pus, and then, as there was no caries of the bone, applied simple sanative dressings. In seventeen days the patient returned home perfectly cured.

Unless great caution is used in operations of the cheek we may wound the salivary duct, or some important nerve or artery; thus occasioning salivary fistula, or partial paralysis or troublesome hemorrhage. Sometimes the purulent matter seems to violate the laws of physics and ascend from the point of origin as in the following:

CASE III.—An attorney's clerk, residing near my house, had a violent inflammation of the upper part of the right cheek, which I could trace to no disease of the teeth. Though twenty-four years old he had not yet cut his wisdom teeth, and perhaps this might be the cause of all the trouble, which seemed the more probable since the bone at this point was much swollen. The face both above and below the zygomatic arch was tumid, red and painful. Venesection and poultices had been resorted to. Under the idea, that a purulent deposit had formed, I made an incision along the malar bone and plunged my lancet into the cheek. There was an abundant escape of pus, but all my efforts could not reduce the swelling above the zygoma. I therefore introduced a delicate bistoury into this temporal tumor, passed it under the zygoma, and thus established a connection with the inferior purulent deposit. The operation was followed by the usual dressings and the patient was in a short time able to return to his business.

But for this last operation, the purulent matter thus confined in the temporal fossa, would probably have eroded the temporal muscle, destroyed, in part, its attachment to the cranium, and caused caries of the temporal bone. Blows or bruises may lead to purulent formations, unless the interrupted circulation be promptly restored, or the extravasated matter evacuated or reabsorbed—witness the following:

CASE IV.—In 1767, an unfortunate inebriate fell and bruised the left side of his face severely against the pavement. He rose, and bathed it in cold water. In a month after this the whole of that side of the face became prodigiously swollen,

from the temporal fossa to the base of the lower jaw, with points of fluctuation here and there over the entire swelling, and a fistulous opening under the malar bone. The space between these points was dark, bruised and devoid of feeling. Through the kindness of a benevolent individual, a shelter was given to the poor man, and I promised such assistance as was in my power.

I laid open, by one incision, three purulent deposits along the base of the lower maxilla, and opened also the temporal abscess, extending the incision to the fistulous opening. I dilated these incisions with dry lint and dressed them with camphorated spirit and sal ammoniac. The parts immediately concerned, were relieved by this treatment, but the rest of the cheek continued to be devoid of feeling, and the patient seemed lethargic. In this dilemma I followed the advice of the ancients and made deep scarifications in the part tending to gangrene, till free hemorrhage took place, and then applied the above named stimulating wash. The two first days showed no improvement: on the third a thin, bloody, but not fetid, discharge flowed from the incisions: on the fourth, they appeared less livid, efflorescent spots were seen here and there, and suppuration began to be established; on the fifth they discharged red blood, and fungous granulations made their appearance.

I now laid over the part a pledget saturated with spirits of wine and styrax, and a general discharge was established. The scarifications assuming now a uniform character, with the incisions first made, after twenty-one days of such treatment, I applied a stimulant digestive to the whole face, and in forty-five days the wounds were all healed except the fistula under the cheek bone. This I knew was owing to caries, which the patient's obstinate opposition would not permit me to treat with the actual cautery. I therefore made daily use of mercurial water for eight days, and on the seventeenth a sequestrum of bone came away about the size of the little finger nail. After this the wound healed, and the patient quite restored, left the house, thanking his kind host, promising to pray for him, and drink a bumper to his health—which last, I doubt not he did at the

first tavern he came to. During the treatment, a rigid diet was enforced ; occasional gentle purgatives, a weak infusion of Peruvian bark, and subsequently, a little wine much diluted, and thin broth. Blood-letting was not thought prudent.

§ 2.—*Ulcers.*

Ulcers of the cheek may be simply superficial, or they may be more deep-seated and complicated, exposing the salivary duct or denuding the roots of the teeth, and occasionally proving fatal—consequences, the result sometimes of constitutional vice, and sometimes of defective treatment. I begin with a case of simple ulcer.

CASE I.—A person suffering from inflammation and swelling of the right cheek, caused by a diseased second upper molar had such an itching of the part, that she could not resist the desire to scratch it. An eruption resulted, which she was advised to wash with sea water ; but despite this it passed into an ulcer as large as a fourpence, and I was sent for. I at once extracted the offending tooth, and directed the ulcer to be washed with a decoction of mallows, mixed with brandy, which soon restored the integrity of the part.

The sting of a gnat, wasp, or other insect, if at the moment, treated with some simple discutient gives usually no further trouble ; but if neglected, or if too violent a revellent be used it may pass into an ulcerated condition as in the following :

CASE II.—A lady while walking in her garden, was stung by a wasp on the right cheek near the course of the salivary duct. She was advised to bathe it with cologne ; she did so and an inflammation ensued which ended in the formation of a small ulcer. She next applied a cerate of white wax and olive oil, but this only aggravated the ulcer and the lady consulted me. I thought it most advisable to set aside all greasy applications, and made use of emollient decoctions, which I found to answer fully my expectations. I concluded the treatment by directing a wash of Goulard water, sweetened with honey of roses.

The use of violent revulsive agents in such cases, does more harm than good, and greasy applications obstruct the pores. A mild discutient, such as salt and vinegar, will be found much more useful and salutary. We shall now consider ulcers of the cheek, arising from internal causes.

CASE III.—[This case, from Wepser, has no further connection with the cheek, than in the casual occurrence of a slight pustular eruption thereon.] Scorbatic and such like ulcers require a specific internal course of treatment; it is ignorant and dangerous charlatanism to place sole dependence upon topical remedies.

CASE IV, (Montpellier Coll. of Cases.)—In this case of ulceration on the inner side of the left cheek, dependent on a gross, thick and acrimonious state of the serum and other constituents of the blood, M. Montagne directed his attention to the correction of the vitiated fluids, by suitable internal remedies, and ordered a gargle made from plantain leaves, house-leek, roses of Provence, with pure honey and quince syrup. Preparations of lead he rejected, for fear the patient might swallow some portion thereof; fat and oily substances he considered inadmissible in the mouth; and he condemned all caustics or escharotics, even in a dry form, from their liability to become dissolved in the saliva, and the consequent impossibility of limiting their action.

§ 3.—*Fistula.*

General remarks on the subject of fistula will be found in the first volume. I shall reserve the subject of salivary fistula for consideration in a separate article, and speak in the present section of simple fistula of the cheek, following abscess or ulcer, or resulting from bad teeth, diseased gums, wounds, punctures, &c.

CASE I.—In 1770, a law student had a violent inflammation of the right side, from the diseased fangs of the upper first molar. A purulent collection formed in the cheek, causing a tumor below the cheek bone, which could not be prevented

from opening externally and forming a fistula. I removed the diseased tooth as soon as was practicable, but this did not cause the fistula to close. I then, after ascertaining, by the use of the probe, that there was no caries or denudation of the bone to cause this persistence, introduced into the fistulous canal a lozenge of green vitriol, burnt alum, and a minute portion of corrosive sublimate, mixed together with crumb of bread. It gave not much pain, and the eschar separated on the fourth day, leaving an opening about the diameter of a large straw, which was healed by a simple digestive, against the twenty-first day, leaving a depressed cicatrix, resembling that of small-pox.

CASE II.—A laborer had an alveolar abscess followed by a fistula, the continued discharge from which did not, however, soften or reduce the tumor which had formed in the cheek. After a time the fistula closed, and a sort of boil appeared externally, over the malar bone, which opened spontaneously, became fistulous, and suppurated under the use of diachylum for six weeks. The disease extending to the eye and nose, the patient was sent to me by M. Moreau, with the request to extract the teeth which were the original cause of the mischief. I did so, and by his consent, took charge of the case.

The fistula, about the size of a quill, passed downwards towards the root of the first molar, without involving the salivary duct. Dilatation seemed to be indicated, but I ventured to dispense with this operation, and tried the effect of introducing a piece of sponge wet with dilute vitriol. It softened the callous walls, established suppuration, and I readily made a cure against the thirty-third day, by using a slightly stimulant digestive, injections, and an expulsive bandage.

This substitution of caustics for dilatation with the bistoury, though in some cases admissible, particularly where the canal is not tortuous, requires much caution and judgment. In the following case the bistoury was necessary.

CASE III.—In 1776, Mons. le Chevalier de * * * consulted me for an inflammation of the gum, the third or fourth which had been occasioned by a carious second superior molar.

The patient had used many poultices of different kinds, but the cheek was still hard, swollen and very painful, and there was a fistula between the gum and cheek. I extracted the tooth, and used emollient cataplasms for the maturation of the abscess, which at length discharged by three openings, one over the anterior wall of the antrum, one at the back part of the zygomatic arch, and one near the angle of the mouth. I inserted a piece of solid caustic into the first, which seemed more calous than the others; these I laid open with the bistoury, thus making a simple and single wound, which I dressed with balsam, basilicon and red precipitate. Suppuration, at first abundant, gradually lessened, and by the twenty-seventh day the wound became quite superficial, except at the central fistula. There was no induration there; still, to prevent all chance of the recurrence of fistula, I touched the part with mercurial water, which caused a small slough. The patient then used the Nuremburg plaster for some days, and on the forty-fourth day was entirely cured.

We can see from this case, what consequences may follow dental disease; and how necessary for the surgeon to be familiar with all the resources of his profession, that he may know how to adapt his remedies to circumstances.

CASE IV.—Wepser was consulted in the case of a young girl, who had suffered for two years from odontalgia, which was followed by a glandular tumor on the left side of the lower jaw, subject to much fluctuation as respects its size. A surgeon had poulticed, with a view to excite suppuration, and then lanced the tumor. A few drops of blood only escaped, but on making a second incision higher up, there was an abundant discharge of sanious matter. The two incisions were still open, and in addition to this, for the last fifteen days the patient had suffered much pain in the right forearm, and also in the calf of the leg and ankle, all of which parts were somewhat swollen. In answer to this statement, Wepser replied that the pain in the limbs was probably of a gouty origin; that the treatment of the local disease of the face must depend upon its cause. If from decayed teeth, these must be removed; if

from maxillary caries, nature must be aided in the separation and expulsion of the sequestrum; if from scirrhus or malignant growth, corrosive sublimate or other escharotic should be applied, and followed up by suitable dressings.

The first surgeon erred in not seeking to find the cause of the disease, in making a premature incision, instead of persisting in the means to insure a proper maturation of the morbid humor—hence the necessity for the second incision. This last point is deserving of particular consideration, for unless the matter be properly matured previous to operation, the part will fail to be fully relieved, besides the danger of causing infiltration of matter, especially in deep-seated abscesses.

§ 4.—*Tumors of the Cheek.*

Tumors, or preternatural elevations, may be classified according to their form, structure and intrinsic character, requiring with this variety of condition, a corresponding difference in treatment. Whether simple and arising from local or external causes, or more complicated and dependent on some constitutional vice, we must have a due regard to the structure and relation of the parts in which these tumors are situated. I shall illustrate by a few cases the course of procedure best adapted to given circumstances.

CASE I.—In 1771, a woman came to me with a tumor on the inner and upper part of the cheek, which pressed against the alveolus and filled up the space left by two decayed molares, the stumps of which were still in the jaw. It seems that it originated in a neglected ulcer, which probably had some connection with the carious molares. Fearful of hemorrhage, I passed a ligature of waxed silk, by means of a curved needle, around the tumor and tightened it gradually more and more each day, till on the seventh day it came away. The roots of the teeth were then removed, and the cure completed against the seventeenth day, under the use of decoction of agrimony, vulnerary water and honey of roses.

CASE II.—In the same year a young girl had an aphthous

ulcer on the inner side of the cheek, which, by the injudicious use of vitriol, and afterwards of lunar caustic had taken on an enlarged and aggravated appearance. It was about the size of a t'opence, elevated about the thickness of a six livre piece, not very painful or causing much hindrance to the motion of the cheek.

Avoiding the knife from fear of hemorrhage, and caustic least they should be dissolved by the saliva, I had resource to the actual cautery. Five applications destroyed all trace of the disease. A weak decoction of mallows and the remedies given in the previous case, were used during the intervals of cauterization, and also for the completion of the cure.

Authors give instances of bone, hair, stones, &c. found in tumors. The following from Manget, is a curious and interesting case, both as respects the symptoms and the operation.

CASE III, (Manget.)—A man, of mature age, and of a melancholic temperament, had, for some years past, suffered greatly with a tumor of the cheek which was at first spherical, but subsequently elongated, and by its extension into the pharynx, caused much impediment to speech and deglutition. The case had been abandoned by many physicians as incurable, when we induced the patient to consent to an operation.

Placing him on a low seat, an assistant drew back with a retractor that side of the mouth on which the tumor was situated ; and then with a sharp scalpel, we proceeded to detach it from the cheek. Scattered irregularly throughout the entire tumor, were scales of an almost osseous hardness, which turned the edge of the knife. The hemorrhage was arrested by the actual cautery and the wound healed in a month's time.

There are certain scirrhus tumors (*ecrouelles*, or king's evil) which attack the cervical, axillary or inguinal glands. They may be pale, painless and non-inflammatory, yielding to general and topical remedies : or, on the other hand, of a more malignant type, red, painful and inflammatory, prone to pass into cancerous action, and requiring the knife of the surgeon rather than caustics. These last are frequently found adherent to the

subjacent parts by numerous bands which may be regarded as the roots of nourishment. The following is a case in point:

CASE IV, (Wepser.)—A young man, aged seventeen, sallow complexion, strong and active, had for the space of a year a glandular swelling on the left cheek, and a smaller one below, at the angle of the lower jaw, both of them pale and indolent. In June 1683, he felt, for the first time, severe pain in a lower molar tooth, and in a few days thereafter, I removed the tumors, which he became apprehensive would increase and give trouble.

I made a deep transverse incision over the larger one which was so firmly adherent to the parts around, that I had to seize and draw it out with a hook whilst I severed its attachments with the knife. The smaller tumor was removed at the same time through the same incision. I applied styptics and covered the wound with a plaster, and by the end of the month it was perfectly well.

§ 5.—*Cancerous Tumors.*

These, as I have before attempted to explain, usually originate in glandular structures, which, at first loose and movable, become attached to the adjacent parts, irritate, inflame, and make them painful. I have shown the difference between occult cancer, and open or ulcerated cancer; and have also drawn the distinction between this and other tumors. When the lips, eyes, nose or palate, become the seat of this disease, it is as before said, usually incurable; we shall see whether they are any more under control when seated in the cheek.

CASE I, (Wepser.)—A merchant, aged forty-three, had on the right cheek a tumor as large as a nutmeg, which he was induced by a quack, in 1680, to have opened. A yellowish ichor escaped, and the incision healed. In 1688, I saw the tumor. It was the size of a pullet's egg, very hard, partially movable, and the investing skin loose. There were two other tumors, hard and movable; one near the angle of the jaw, and extending towards the corner of the mouth, the other near the pharynx.

The largest of these three tumors was ulcerated at one point from the irritation of a canine tooth, and was very painful at that place. I opposed the performance of an operation, because of the extent of the resulting wound—the suspicious character of the two other tumors—the great chance of the recurrence of the disease, which, from the existence of lancinating pains, seemed to me to be of a malignant character. Appetite was gone, the patient sustaining himself mostly by wine. The ulcerated surface was soft, and had already discharged bloody sanies. I considered the case as one of atheromatous or melicerous tumor, rendered malignant by maltreatment, and advised the removal of the irritating cuspidatus, and in diet, the avoidance of acid and salted food, cheese, fried meats, &c.

July 18th, in the same year, he wrote that the large tumor had opened anteriorly, and discharged much matter. Sept. 10: it opened also internally. The external ulcer was large enough to hold the first joint of the little finger; the skin firmly attached to the tumor; the other tumors not changed. An abscess of the cheek formed, caused great tumefaction around the eye, and finally opened near to the ulcer, its orifice remaining ulcerated. There was no pain in the tumors; appetite good; intestinal functions regular; the ulcers not foul; the fistula red and callous.

June 10, '89: M. Bruner wrote that the tumors had been removed by an operation, in which there was no further accident than syncope, caused by loss of blood from a branch of the carotid. The wound, though large, had been skilfully brought together, and was now nearly healed over.

This case gives no well grounded encouragement for operation in parallel instances, because the report is not complete, and there is no assurance that the disease may not have recurred even before the healing up of the wound. The frequency of recurrence under similar circumstances, should guard the surgeon from endangering his honor and reputation by too confident promises of success.

CASE II, (Nozzet.)—A man, aged twenty-two, was afflicted with a cancer, which had eaten the cheek away so that a small

orange could readily be laid into the cavity. His general health seemed to be very good. In about a month after prudent but unavailing attempts towards cure or palliation, he suddenly died. Permission being gained for an autopsy, we noticed over the body little points resembling flea bites, some red, others dark, and others black. While preparing for the examination, we noticed these spots running one into the other, and forming on the skin, after it was dissected up, vesicles of varying size, from that of a bean to that of an egg. In the ulcerated cavity we noticed a frothy scum, and on approaching the ear perceived a murmur, as of matter in a state of fermentation. Our fears prevented us from carrying the examination further; we hastily left the body, and took prompt measures for its immediate interment. [The inferences drawn from this case are illogical, nor shall we weary the reader by translating them. The case seems to us nothing more than one of active and rapid post-mortem putrefaction, so common in malignant disease.]

CASE III, (Laforêt.)—Pierre de Florence, aged sixty-three, face florid, nose large and greasy, and covered this twenty years past with pimples, had a cancer of the right cheek, which at length extended as far as the eye. His surgeon had given to it the name *noli me tangere*. It had not yet ulcerated, but its surface was covered with yellowish and bloody lobes.

Fearful of exciting ulcerative action if any violent means were used, we advised the patient to be content with a palliative treatment. This consisted mainly of decoctions of garden nightshade and solanum, wine, burnt alum and acetate of lead, and was continued, with such variations as symptoms demanded, for two months. But all hope of arresting the disease were idle, it proved ere long fatal.

We see in this case the progress of such affections, and also the prudence of the ancients in their management. To Laforêt the knife seemed a useless torture, and escharotics a mischief; prudence and humanity dictated the attempt to palliate suffering, rather than to sacrifice the patient to the ambitious desire of display. Cancers do not necessarily ulcerate, but may, in an

occult form, extend their roots, contract adhesions with surrounding parts and become ineradicable. Where the skin is hard, irregular and marbled, with sharp lancinating pains, there is but little question as to the existence of cancer, especially if these symptoms occur in glandular parts.

We cannot assume any fixed character, as regards hardness or softness, moisture or dryness, paleness or redness, inasmuch as these are found to vary with the locality and peculiar circumstances of the tumor, and therefore cannot be relied upon as diagnostic symptoms.

In the Philosophical Transactions there is an extraordinary case of cancer of the cheek, originating from a contusion of the malar bone. It spread over the whole cheek; destroyed the eye, involved the ear, nose and frontal bone; penetrated to the brain, and eventually caused destruction of the entire cerebral substance, a small quantity only of a dark, putrid matter remaining in the cavity of the cranium. What is most astonishing, is that the patient was perfectly sensible and free from spasms or convulsions, and lost his speech only three days before his death.

For the true cause of this cancer, we must look beyond the contusion which excited it, to a deeper-seated constitutional vice. In the absence of such morbid tendency, a simple injury could have no such disastrous consequences. Regarding the loss of the brain here mentioned, we would observe that many curious yet incontrovertible instances compel physicians to silence upon a subject they are unable to explain. Béligny gives the case of a girl, whose head was found entirely filled with a clear liquid, and states, as the result of careful observation, his opinion, that where the brain is in part or wholly destroyed, intelligence and reason are lost; but that, so long as the meninges, the medulla oblongata, the spinal marrow and the nerves remain sound, the vital principle may continue unimpaired. The case above cited, where reason was *not* lost, seems rather to militate against the doctrine of Béligny.

Zacutus Luzitanus makes mention of a child, ten years of age, who received a blow on the back of the head, that pene-

trated the brain. A cerebral hernia occurred, as large as a nut, but the child was soon restored to health. Three years after this, hydrocephalus occurred and proved fatal. On examining the skull after death, no cerebral substance could be found, but between the membranes was a large quantity of limpid water. The discussion of these phenomena would transcend the limits of this volume.

CASE IV, (Plater.)—A peasant had a hard, livid tumor on the cheek near the ear, which gradually increased, became very large, and, from the injudicious use of maturatives, ulcerated. I at once pronounced it incurable, and ordered applications which were strongly desiccant without being caustic, for the purpose of correcting the corruption and restraining the bleeding. Soon after this, some woman gave him a powder of garlic and soot, which excited a fatal degree of irritation and inflammation.

CASE V, (Plater.)—In 1598 a lad, fourteen years of age, had a tumor on the cheek as large at its base as the hand, and rising to an obtuse point, not changed in color, nor painful, but attended with extreme prostration. Some surgeon, having found a soft place, lanced it, although I had pronounced the tumor decidedly cancerous. The result was the establishment of a foul and increasing ulcer which discharged a very offensive sanies. Another surgeon wished now to extirpate the entire tumor; but I dissuaded the patient from giving his consent, in consideration of the size of the wound, and the risk of hemorrhage. This cancer continued to discharge a profuse, bloody and fetid sanies, during the rest of the year—this was in autumn—and presented a horrid spectacle. At the close of the year the patient sunk under his sufferings.

The death of a certain foreign nobleman in this city, from cancer of many years standing, which had resisted all attempts at cure, is well known. These cases establish clearly the intractable nature of this complaint, and the danger of active interference at their outset.

CASE VI, (Hildan.)—In 1594, I operated upon the widow of a tailor, for a small cancerous tumor on the inside of the

right cheek, about as large as a bean, hard, livid and irregular. After a preparatory course of bleeding, purging, &c., I proceeded to the operation, placing the patient in a seat, with one assistant holding the head between the two hands, and another drawing open the mouth. I passed a curved threaded needle through the tumor, and by this means drawing it towards me, I dissected it out with a bistoury. I then applied the usual local remedies, and pursued a course of internal treatment with a view to prevent the recurrence of the disease.

Possibly this tumor might not in reality have been a cancer. In any event, the use of the knife was by far more judicious than that of escharotics. Carbuncle, in view of the malignancy of its action, may be regarded as a species of cancer, and will sometimes resist every effort of art for its cure.

CASE VII, (Journal of Med.)—A robust laboring country-woman accidentally received in the eye some of the variolous matter from a child whom she was nursing, sick with the small-pox. It swelled rapidly and prodigiously, forming a large, salient, conical tumor, discharging a bloody serum. In this state she continued for twenty years, taking but little medicine, and observing no caution in diet. Within the last fifteen months, the tumor had become the seat of keen pain, and she consulted a surgeon. He found the orbit filled with a putrid, sphacelated mass, and the eyelids of a cartilaginous, almost bony, hardness. The advice of a physician whom he consulted, dissuaded him from attempting the extirpation of the disease. He therefore remained contented with topical applications, until he was advised by a very distinguished physician, who regarded the evil as chiefly local, to perform the operation. He first removed the mass of disease from the cavity of the orbit; on the next day he cut away the upper eyelid, and on the day following the lower one. The hemorrhage could not be arrested by the ordinary styptics, and caustic potash was therefore resorted to.*

After this operation the disease committed frightful ravages

* The cautery or compression would in such case have been preferable.

on the cheek, which was covered, from the eye to the neck, and back to the ear, with lobulated and fungous masses, forming altogether a mass measuring three feet around its circumference, and projecting some four inches forwards. The gums were eroded, the teeth loose and carious, the face greatly distorted, and the side opposite to the disease was much emaciated. The condition and appearance of the patient was truly horrible. No remedies availed to arrest the progress of the disease or allay the pain. In its course, the bottom of the orbit, the os planum, os unguis and sphenoid bone were exposed, and were of a very dark color. The cathartics given to correct constipation caused bloody stools. With this exception the patient seemed to suffer no irregularity or inconvenience. In fact, until the occurrence of this disease she had always enjoyed excellent health; she was now sixty. The pulse was hard and feeble, and the symptoms of weakness and prostration, which shortly after supervened, seemed to announce approaching death. The Journal closes the case at this point.

CHAPTER SEVENTH.

DISEASES OF THE SALIVARY DUCTS.

I SHALL, for the sake of greater clearness, devote a chapter especially to the consideration of the wounds, ulcers, tumors and resulting fistulas of the salivary ducts, which, as Verduc says, occasions such inconvenience and annoyance.

These ducts will, in an excited state of the glands, pour forth a copious secretion, which we call ptyalism: or again, from obstruction or inactivity, they will fail to discharge a proper quantity of saliva—a symptom very common in scorbutic children at Lyons, in whom the mesenteric and other glands are found enlarged and scrofulous. This suppression, according to some authors, frequently occasions epilepsy and convulsions, by the pressure of the tumid glands upon the nerves, and gives rise to king's evil. The cure of these affections by mercurial salivation is evidence in favor of the position.

The prognosis of diseases of the salivary ducts is uncertain and their cure difficult. Wounds, both of the duct and the gland, should, if possible, be united by absorbent and adhesive plasters. Some advise, in case the wound is across the duct, and large, that the actual cautery be used: but we think this tends rather to the establishment of incurable fistula. Perhaps it might be applied with advantage near to the gland, for in this position the salivary ducts have not as yet united into a single tube, consequently the obliteration of one or more will not necessarily cut off the flow of the saliva into the mouth. It is this continuous flow from the glands that gives such obstinacy and annoyance to salivary fistulas, wherever, from any cause, it is obstructed in the course of the salivary duct; for it is not in our power to arrest the secretion until a union shall have been completed.

Besides the cautery, other remedies have been employed, such as dilute mercurial water, lunar caustic dissolved in plantain water, sweet spirit of vitriol, burnt alum, &c. Scarification, bandages and compressing apparatus will be found at times essential. One caution, however, it is very necessary should be observed—as complete repose of the part as possible: a caution which Fabricius de Aq. recommends in all wounds of the cheek, lest the muscular action should interfere with the proper reunion or occasion hemorrhage. This muscular action and movements of the parts, by exciting the glands to increased action, and influencing the course of the fluid through the wounded duct, may determine the establishment of external salivary fistula. The advantage of rest will be seen in the following:

CASE I, (Rusin.)—A lady had a fistula behind the left angle of the jaw, below the ear, to which it was found impossible to apply permanent and effective compression, for want of a point of resistance. In this difficulty, M. Piplet, a surgeon, distinguished for his treatment of hernia, was called in, but he was unsuccessful. M. Rusin then applied to M. Pautre, a celebrated clock maker, who readily seized his idea, and constructed an instrument which completely answered the required purpose, and brought about a cure.

Although M. Rusin made several applications of mercurial water—whether in its concentrated form, as a caustic, or diluted as a desiccant, we are not told—the issue of recovery turned, doubtless, upon the application of the apparatus of M. Pautre, as is evident from the fact that previously to its use the fistula had resisted every effort made for its closure. To assume, then, that the cure was due rather to the mercurial water, &c., than to the ingenious compress, is unjust to the artist, discourages the effort to render the artificer useful to the surgeon, and makes the surgeon himself timid and hesitating, in all such cases where mechanical ingenuity is the best, and perhaps the only means at command.

CASE II.—A man had a syphilitic ulcer of the face, which eroded a large part of the right cheek, and involved the duct of

Wharton. The ulcer healed under proper anti-venereal treatment, but a salivary fistula remained, with an opening about the size of the head of a large pin. The continued discharge of saliva, which was greatest during exercise, was very annoying, rendering it necessary for him to wear folds of linen about the chin, to prevent it from trickling down over his clothes, and even then his shirt was almost constantly more or less wet with it. Any adhesive plasters applied with a view to prevent the flow, were in a short time saturated, and were constantly coming off.

On examination, I found that this fistulous canal opened also into the mouth; but the saliva did not flow in that direction, because of the smallness of the inner aperture, and also because of its upward position. I thought if I could succeed in permanently closing up the external opening, the fluid would then flow inwards—whether by a natural or a fistulous canal was of no great moment, so that the discharge was only into the mouth and not external. I first used vitriol, followed by compress and kept up suppuration with diachylon ointment. But the opening still remained, surrounded by a callous ring. The cautery, twice repeated, was followed by the same unsuccessful result. Lastly, I made a plaster of white pitch, pulverized coral, and a little common turpentine, spread it on a piece of black taffeta, softened it by heat and applied it over the fistula. Three weeks after the patient came to me: the plaster had fallen off, leaving the fistulous opening perfectly closed. It may be said that this plaster would not have been thus successful, but for the previous treatment. Be that as it may, it was enough for the patient and myself to know that a cure was effected.

CASE III.—In 1767, a countryman applied to me, having a large boil over the submaxillary gland. I recommended diachylon plaster, under the use of which the tumor burst, but discharged itself imperfectly. To correct the fistulous induration remaining, I applied a lozenge of corrosive sublimate. After the separation of the eschar, suppuration was set up and the wound healed with the exception of a salivary fistula. Various escharotics were tried for its closure but to no purpose: it remained thus for eight months. On passing a bristle through

the fistulous canal, I was met, midway, by an obstruction which not even a probe of gold wire could overcome, and which I supposed must arise from some callosity. I applied three times with a silver probe, pure mercurial water, at intervals of three days, after which I was able to introduce the bristle through the whole course of the canal into the mouth, where I allowed it to remain till the discharge had lost its purulent character.

I was then anxious to direct the flow of saliva through the inner and proper outlet, and for this purpose sought to close the external opening. Making two punctures in the depression around the orifice, I applied a plaster of the adhesive mastic mentioned in the previous case. It remained three weeks, and at the end of that time fell off showing the fistula entirely healed up.

I take to myself no great credit for the discovery of this mastic: it was the mere suggestion of the moment. It is necessary that the skin should be perfectly dry before it is applied, else it will not hold; but when once adherent it is with the greatest difficulty that it can be detached. Wounds of the cheek will occasionally implicate the salivary duct as in—

CASE IV, (Saviard.)—In the treatment of a wound in the right cheek, midway between the mouth and ear, a salivary fistula occurred which resisted all ordinary modes of treatment. In the absence of any natural internal outlet, it became necessary to make an artificial one. This could not well be done with a bistoury, because of the readiness with which simple incisions reunite. I therefore used for the purpose, a hot iron in the same way that the obstruction is frequently removed in cases of lachrymal fistula. Having thus established a permanent internal opening, I proceeded to close up the external one which was soon and readily accomplished.

This method of M. de Roy, reported by Saviard, will not always be found successful, especially in fistulas of long standing, attended by induration towards the inner side. The above case was one of recent standing, and therefore yielded more easily to the remedy.

CHAPTER EIGHTH.

DISEASES OF THE GUMS.

§ 1.—*General Remarks.*

THE gums are composed of glandular substance, covered with a peculiar integument, and liable, in common with other soft structures, to various diseases, differing in origin, character and destructive action.

In looking over the works on this subject, we find that among surgeon dentists it has been treated in a slight and unsatisfactory manner, chiefly, as it would seem, to aid in the vending of some favorite mouth-wash: whilst among really surgical treatises we find none but what are very superficial, presenting neither any new nor any profound thought.

Avoiding all tedious and minute detail, I shall consider these diseases accordingly as they may be idiopathic or symptomatic. First among the internal vices of which disease of the gums is a prominent symptom, is scorbutus—called sometimes by the ancients *stomacace*, or disease of the mouth. Next in frequency is syphilis, the symptoms of which will sometimes degenerate into those of scurvy. Lastly, the union of these two vices will cause a third disease known only by its symptoms, which are of a very incurable character. We have here, also, ulcers, fistula, fungus, and tumors, sometimes cancerous, at other times scrofulous.

These internal vices may be ours by inheritance, or received through the milk which nourishes our early life; they may be contracted by contagion, or be the result of our own imprudence, or dissipation. Where disease of the gums have such an origin, the physician must co-operate with the surgeon in its treatment.

Among external or local causes, we may enumerate—accumulation of tartar; diseased teeth; the action of very cold or very hot substances; blows, bruises, the displacement or loosening of teeth; wounds, lacerations and excoriations; the use of improper dentifrices; lastly, the eruption of the teeth, which, though a normal process of nature, is nevertheless the frequent source of severe and dangerous irritation.

§ 2.—*Parulis or Abscess of the Gums.*

Parulis is precisely analogous to abscess in other parts of the body. All carious teeth do not cause parulis, neither is dental caries the sole cause thereof. The alveolar inflammation must pass into the suppurative stage before this event results, and this does not by any means always happen. Again, violence inflicted upon the teeth; suppuration of the dental pulp, from whatever cause arising; filling cavities in teeth which extend to the nervous pulp, thus obstructing the escape of pus—are all, more or less, frequently causes of parulis or gum boil. These views we find confirmed among the ancients, in the writings of Fernel and Marchetis; from the latter I give the following:

CASE I, (Marchetis.)—A year ago, I had under treatment a monk for tumor of the gum. The swelling extended as far as the zygoma, discharging itself at that point by an opening, through which, upon closing the mouth, the patient could force air. The bone under this tumor was much altered and softened by the purulent fluid, which rendered many applications of the cauterium necessary, in order to the prompt separation of the diseased portion. The cure was further retarded by the supervention of several fistulous openings which were healed up with much difficulty.

Marchetis states as the result of his own experience, that all these untoward symptoms may be avoided by a timely incision, previous to the commencement of suppuration, and that such an incision needs no other healing application than is supplied by the saliva of the mouth. Fernel and he have given much

excellent advice on this subject, but seem strangely to have forgotten a very obvious, and if we would prevent recurrence, a very essential mode of relief, to wit, the extraction of the offending teeth; also, if necessary to the prevention of induration, the use of poultices, gargles and venesection. Some oppose the operation while the face is inflamed, and perhaps with good reason, so long as there is no evidence of suppuration, from the possible increase of inflammatory action. But where abscess has already taken place, the tooth should be removed, if the mouth can be sufficiently opened for the purpose.

Alveolar abscess determines sometimes towards the palatine instead of the buccal side of the alveolus, giving rise to a phlegmonous deposit in the palatine arch as in the following case:

CASE II.—A wine merchant consulted me about two alveolar tumors, red, soft, and painful, one on the side towards the cheek, the other in the palatine arch, both caused by a carious second molar. Gargles, &c. had been used and the tumors twice lanced. They discharged no pus the first time and very little the second. The cheek remained distended and the tumors assumed a spongy rather than a purulent appearance. I at once extracted the tooth in question, which the physician before me had deferred removing till the inflammation should subside; scarified the tumors, used a simple healing decoction, and in a very few days the cure was complete.

CASE III.—An individual called upon me for relief of a sudden attack of alveolar inflammation in the lower jaw. Being on the point of marriage, he demanded that the shortest possible method of cure should be adopted. The cheek was hard and painful and the mouth could scarcely be opened. I could distinctly perceive fluctuation, and, therefore, pronounced confidently, that the extraction of the diseased teeth would give prompt relief. A large quantity of matter, not as yet putrid, escaped upon the removal of the two molares, thus verifying my prediction. The patient used a gargle of warm water and a compress and expulsive bandage: on the third day he was quite cured. During twenty-two years practice I have repeat-

edly adopted this mode of treatment, and in no single instance to the injury of the patient. In connection with this case, we would remark upon the advantage of operating in anticipation of the infiltration and putrescence of the purulent matter, thus greatly simplifying the treatment; also, upon the necessity for removing the original cause of the affection.

CASE IV.—In 1770, an individual consulted me for a violent inflammation of the face, proceeding from a first right upper molar. I prescribed bleeding, gargles, poultices, &c. and rigid diet. But my advice was not closely followed; he also suffered another person to extract the tooth which I had declined removing. The operation gave no relief, and my treatment was renewed. He was twice bled in the twenty-four hours, and then twice from the ankle; the bowels were regulated by injections, rigid diet enjoined, fomentations, &c. persevered in, till on the third day, a hemorrhage from the socket of the extracted tooth relieved all the symptoms; and the patient speedily recovered. Neglected parulis may cause destruction of the periosteum, alteration of the osseous structure, and other such evils. The following cases are in point:

CASE V, (Mahon.)—In April, 1776, M. le Cocq, surgeon of the Bastille, sent to me a young woman, aged twenty, with a fistula on the anterior part of the right upper jaw, the result of alveolar abscess from a carious lateral incisor. She would not consent to what I deemed the only means of relief—the extraction of the tooth. In June following, she came again, having herself removed the tooth; the fistula was enlarged, and the bony septum adjoining the central incisor carious. I first applied dry dressings, then prepared sponge, with its end dipped in oil of camphor, but could not prevent the formation of a second fistula. I then, by a V shaped incision, made a single wound of the two, employed detersive and vulnerary injections, together with tinctures of myrrh and aloes, and in about eight days the carious bone came away. I retained my dressings by means of a piece of lead attached with thread to the adjoining teeth. An unhealthy appearance of the granulations which appeared in a few days, induced me to resort to the actual

cautery, after which I used a balsamic digestive, and soon completed the cure.

CASE VI, (Chabert.)—A soldier came to the hospital with abscess of the gum on the lower jaw, accompanied by fever. I lanced it and gave vent to a greyish matter, but the fever continued, and in a few days another abscess formed near the symphysis. I continued an incision from one tumor to the other, found the bone carious to a considerable extent, and three teeth very much loosened. I laid into this incision a pledget of lint dipped in tincture of myrrh and brandy, and gave purgatives and vulnerary drinks. About the thirty-fifth day the bone exfoliated, and against the fiftieth the wound had healed without any farther application, leaving a considerable depression at the point of cicatrization. This case is unsatisfactory as regards the cause of the parulis and of the loosening of the teeth.

If parulis be disposed to suppuration, this process must be aided by emollient and relaxing gargles and poultices of various kinds, as circumstances may demand, preparatory to the use of the lancet or bistoury. Ointments and salves may be admissible when the matter determines to the exterior, except in cases where there is a proneness to erysipelatous inflammation. For further remarks on this subject, see Chabert's *Traité d'Odon-talgie*, 1756.

§ 3.—*Fistula of the Gums.*

When parulis discharges itself imperfectly, or the bone is acted upon by its vitiated contents, a fistula is established, in the treatment of which it is necessary first to seek the removal of the cause or causes of the disease. "If," says Guy de Chauliac, "fistula of the gum penetrates to the bone, the teeth must be extracted and the canal dilated. Should nitric acid or arsenic fail to restore a healthy action, the bone must be exposed, and if carious it must be cauterized, following the cautery with suitable treatment. If these means fail, a counter opening may become necessary; but this should, if possible,

be avoided, from the difficulty which the presence of the saliva causes in the healing of such canals communicating from within outwardly."

To these judicious remarks I can add nothing. When these difficulties are encountered, we may fairly suspect incomplete exfoliation, fungous growths, insufficient dilatation, or premature closure of the external wound. By the touch we may learn the presence of callosity, and by the probe may find whether there exist any sinuses, and if so, their course and position. I have found a flexible probe of lead very useful for this purpose.

If by compression around the fistula when it is external, we are enabled to force out any fluid, we should carefully notice whether it be purulent or lymphatic; in the latter case the presence of salivary fistula is to be presumed, and treated as directed in a previous chapter. In fine, the precise condition of the bone should be ascertained; caries should not be mistaken for simple denudation; the causes of the disease should be removed, such as carious teeth or stumps; prudent yet sufficient dilatation of all sinuses made; all indurations destroyed; lastly the discharge should be kept up till it assumes a proper character and the wound takes on a healthy aspect.

Where the opening of the fistula is internal, its course marked by a reddened line, pain felt on compression, and purulent matter expressed, especially if the fistula be of long standing, a counter opening is advisable. This, however, will not always suffice, and it becomes necessary to lay open the various sinuses or dilate them with prepared sponge. The cautery, for indurations, &c., must not be forgotten. These directions will apply equally to the upper as to the lower jaw, with the additional caution necessary from the presence of the antrum and the duct of Stenon.

CASE I.—In 1769, I was consulted by an individual with fistula of the lower jaw, near the first molar, which was much decayed, and had been the source of repeated attacks, but from timidity of the patient had not been extracted. The fistulous canal had extended along the base of the jaw in consequence

of these repeated attacks, so that the removal of the tooth did not suffice for the cure. Caustic was introduced, an eschar formed, injections and balsams used; yet the fistula remained, and the external tumor increased. Poultices and plasters externally, and internally the cautery, were equally unsuccessful, rather increasing the pain and inflammation than diminishing it. I now concluded that the bottom of the fistulous canal was too remote from its internal orifice, and decided to make a counter opening, from within outwards, through the fistulous canal. I closed this external counter opening with prepared sponge, and in three days suppuration was established. Detersive injections and digestives,* combined with red precipitate, removed all induration; the internal orifice soon closed; and under the use of the compressing bandage complete union was effected in thirty-three days. The bone in this case was not involved.

CASE II.—In the same year I was consulted by a lady of Provence, who had a well marked parulis on the right side of the lower jaw, evidently occasioned by the second bicuspid and the first molar, both carious. The timidity of the surgeon and reluctance of the patient prevented their extraction; therefore, though the abscess was opened and treated in other respects as judiciously as possible, a bloody matter continued to flow from the incision, and a tumid hardness remained, spread along the base of the cheek, and began to extend to the neck. At this crisis the surgeon ventured to extract the teeth, but this did not prevent the formation of an external opening, and subsequently—notwithstanding the enlargement of this first with red lead, &c.—of an internal one, both of which remained fistulous, the inner one forming sinuses in different directions. In this state I first saw the case.

With a probe I traced the course of the fistulous canals, broke down a septum existing between the internal and external orifices, laid open the sinuses by incision, and applied for the first day dry dressings. On their removal I saw that a

* A French term commonly applied, as before remarked, to a stimulating ointment or dressing.—*Tr.*

portion of the external plate of the maxilla was carious, and touched it with the cautery. This was followed by dressings and injections, as in the preceding case, retained in position by adhesive strips. Exfoliation took place on the seventeenth day, suppuration gradually lessened, and cicatrization commenced. As soon as it was admissible, I used the compressing and expellant bandage, and in fifty-six days the lady returned to her family.

I was surprised to learn that some had regarded this case as one of venereal origin. Such unjust suspicions are, necessarily, most repugnant to the feelings of the honest patient, male or female. We may learn from these two cases that the fears of Guy de Chauliac, with regard to the difficulty of healing an external counter opening, are not altogether well founded. I have said that fistula may result from inflammation and suppuration of the dental pulp, as in the following case :

CASE III.—Some years ago, Mons. A. Petit sent to me an individual who had for some time had a small abscess over the fang of the left lower cuspidatus. The tooth was not in the least decayed, nor sensitive to heat or cold, but was subject, especially in damp cloudy weather to dull pains, at which times the abscess discharged more freely than at others. A regard both to appearance and utility, made the patient unwilling to consent to its extraction.

I had in my own case, endeavored for two years to preserve a first bicuspid affected in a precisely similar manner, but which I was at last obliged to have drawn, because of the severe pain which it began to cause, in the whole of that side, and because the fistulous canal seemed to be extending deeper. The crown was a little discolored, and after extraction, I noticed that the whole fang was very dark, deepening in color, from the neck towards its extremity, and pierced with four or five small openings into the nerve cavity, which, on splitting the tooth, I found full of a dark and very offensive matter.

This patient was induced by the persuasion and promises of some operator, to consent to a round of treatment, consisting of opiates, elixirs, bone scrapers, balsams, cautery and butter of antimony, all of which served but to irritate the gum, loosen

and elongate the tooth, which he had been told could be saved, and deepen the extent of the fistula. Again he came to me and this time consented to the only operation which could possibly give permanent relief, the removal of the tooth. A portion of the external plate of bone exfoliated, and the wound healed under the ordinary remedies in fifteen days. Sophistry declaims against the apparent sacrifice of a sound tooth and the empiric's love of display is offended by so simple a means of cure. Meanwhile the honest operator, in secret, wondering at the credulity of mankind, must rest content, in the consciousness of right, till such time as the veil shall be drawn aside and truth stand forth in its true power and beauty.

CASE IV.—A groom while tending a horse, received a violent kick in the face, which wounded the lip and loosened the two superior central incisors, almost turning them out of their sockets. As the teeth were perfectly sound, and the age, condition, &c. of the patient favorable, they were immediately replaced, and soon became firmly attached. A short time after this, dull pains began to be felt, with numbness in this region, and a gradual tumefaction of the gum over the left incisor, which began to lose the firmness of its attachment. Notwithstanding every precaution, an abscess formed, was opened, and then subsided; but suddenly the symptoms again returned, and a second fistula formed over the right incisor, which tooth, however, was not loosened or changed in appearance. I hoped, therefore, to be able to save this latter tooth, but all our efforts after the extraction of the left incisor, even the use of the cautery, could not produce closure of the fistula; and the patient, wearied with his condition, determined to sacrifice this tooth also. After extraction, the cure was speedily made.

Perhaps if the bony septum between the incisors had been perforated after the extraction of the left one, an escape might thus have been given for the matter, the fistula closed and the right incisor saved. Still the fact that the removal of this last tooth resulted in the cure of the case, would seem to argue that its extremity was in direct relation with the base of the fistula, and consequently, that its loss was indispensable. Un-

fortunately we are sometimes not aware of our error till it has been committed. The removal of the teeth so necessary in this case is not always demanded or always beneficial; take for instance the following:

CASE V.—A lady, falling against a door step, cut her lip, bruised the nose and chin, and displaced a central and lateral incisor. These teeth were replaced and became firm, but abscess and fistula followed, which six months of the most careful treatment could not close up. The two teeth were then extracted but without any good result. It was then proposed to perforate the alveolus, but as the patient and her parents were opposed to this, we had recourse to the cautery. By six applications, we accomplished the closure of the fistula, and now regretted the unavailing and—as we could not but believe—uncalled-for extraction of the two replaced teeth.

The altered action of the periosteal vessels, whether caused by the presence of dental caries, or of some internal vice, may give rise to alveolar abscess and fistula. The tooth, in these cases, will lose its solidity without necessarily changing its color, and after the escape of matter the slight fistula resulting may continue for a short time, and then close up. At other times the tooth will gradually change its color, from absorption of pus or other fluid; or it may lose its periosteum and become a dead substance. But notwithstanding this, and also the occurrence of denudation of bone at the fistulous orifice, we must be careful how we proceed too hastily to the destruction of portions of the bone, or to other like violent measures. To remove a tooth which might have been saved, or to inflict unnecessary suffering, is hasty, inconsiderate and unfeeling. The effect of this want of caution is shown in—

CASE VI.—Some years since, Mons. de M * * * had a slight parulis over a lower canine tooth. The first symptom had been a loosening of the tooth, without any decay, and a numbness in the parts adjoining the tooth. The gum became swollen and opened of its own accord. The operator pronounced it to be a case of fistula complicated with caries of the bone, and proceeded at once to apply the butter of antimo-

ny to the sore, thus aggravating the inflammation, causing ulceration and destruction of the alveolus over the cuspidatus. The operator, mistaking his own handiwork for the result of disease, showed great surprise, and expressed his fears of the presence of some venereal taint. Whereupon the patient, much incensed, sought M. Geoffroi, by whom he was recommended to me. I destroyed the irregularities of the alveolus, advised a decoction of agrimony, together with vulnerary water. The borders of the ulcer healed, but left the front surface of the root of the cuspidatus exposed. I advised, nevertheless, against its extraction, since it was not painful in itself, nor the source of any injury to surrounding parts.

§ 4.—*Internal Dental Abscess and its Sequelæ.*

This disease, caused either by rupture of the dental vessels from violence, or by improper use of the teeth, or by the injudicious use of the file, is usually preceded by acute and lancinating pain, and followed by a small tumor, the size of a hemp seed, from which is discharged a sanious purulent matter, the gum remaining otherwise healthy. Metastasis of other disease, or some internal vice, are also causes of this affection. The surest and best means of avoiding the sequelæ of dental abscess is to extract the tooth. A few cases will show the difference between alveolar abscess from this cause and that arising from caries of the teeth.

CASE I.—The late M. Desjardins, surgeon, called me to see M. Rosé, who for some days had suffered such violent pain about the chin, that he could get no sleep at night nor attend to his business during the day. None of his teeth presented any appearance of decay, nor were they sensitive to heat or cold. Upon a more strict examination, I found the gums below the incisores red and inflamed, but not swollen, and at one point, over a right incisor, a small purplish spot; still we could not decide which was the affected tooth, till by the reflection from a lighted taper we were enabled to perceive a difference in appearance, and pronounce the lateral incisor, which

seemed clouded and striated, to be the tooth in fault. I pierced the purplish spot above mentioned, which discharged a bloody serum, and my probe passed through the alveolus down upon the root of this incisor. I then extracted it, and in a few days all the symptoms had subsided. On splitting open the tooth, it was found filled with a dark and highly offensive matter.

CASE II.—In 1774, a young lady had a lower cuspidatus which projected beyond the dental arch and overlapped the adjoining incisor. This tooth was filed by a dentist, preparatory to the correction of the irregularity. She told me that the file caused extreme suffering, far greater than all the subsequent operations with plate, ligatures, &c.; that from the time of its regulation up to the present moment, she had not been able to endure the contact of any hot or cold substances, or even of the tongue, and that to chew upon it was quite impossible; and that frequently at night she had shooting pains over the whole chin.

I examined the mouth and found between the lip and gum a species of induration, upon compression of which a reddish fetid matter would escape from around the neck of the tooth. The tooth itself was darker colored than the others. She could not bear the least pressure upon any part of the jaw. I could only in this case, strongly urge the removal of the cuspidatus, stating at the same time, that from the crowded condition of the other teeth, there was great probability that the space left would very soon be nearly if not quite closed; also, that, in any event, the loss of one tooth was surely preferable to the almost certain loss of several and perhaps of a portion of the jaw. I extracted it, found its fang dark and streaked, and on breaking it open, a grayish and most intolerably offensive pus escaped.

I am astonished that the parents will allow the teeth of their children to be filed, twisted and moved about in a way so contrary to all nature and sound physiology, simply for the purpose of improving the appearance of the mouth. It certainly would be much better to guard against such irregularities by a proper attention to the mouth at the time when the tempor-

ary teeth give place to the permanent; Such a course will usually be found sufficient. The file should never be used for the correction of irregularities, unless we are sure of leaving a sufficient wall of firm substance to protect the nerve cavity. [The file should *never* be used in the treatment of irregularity, but in all cases space must be gained, where necessary, by the extraction of such bicuspid or other teeth as the particular circumstances of each case may demand. To the present improved and gradual method of regulating irregular teeth, the objections of M. Jourdain cannot apply, though even, at the present day there is a shameful misuse of that much condemned, much abused, and yet most valuable instrument, the file.]

CASE III.—In 1770, Mons. A. Petit sent to me a Madame Despinasse, who had been a long time under treatment for a fistula below the lower central incisores, which had also an external opening in the mental fossa. The teeth were neither loose nor discolored, and as the patient was young and in good health, she was very naturally averse to their extraction. Caustic, cautery and all other means had been tried without success: the internal opening cicatrized, but the external continued still to discharge matter. M. Petit and I thought it might do some good to make a communication from within outwards through the fistula, but this also, though followed by the sponge and balsams as usual, was equally unavailing. By the use of the sound we found that the bone was pierced with several canals near the roots of the incisores, and this led to a strong suspicion that these roots, and possibly the nerve cavities also, were the seat of disease. I, therefore, by the advice of M. Petit, extracted the two central incisores, found their fangs dark and eroded and their cavities filled with a thick morbid matter. The fistula was touched with caustic potash and the carious points of bone with mercurial water. These separated in good time and the wound healed rapidly under the usual detergent and vulnerary washes, leaving only a slightly depressed cicatrix.

I might give many more cases illustrative of the principles

laid down in this section, but these will, I think, suffice to guide a reflecting mind under analogous circumstances.

In old persons we frequently meet with teeth which are so much worn away on their grinding surface as to interpose but a very thin film of bone between the surface and the nervous pulp, insufficient to protect that pulp against the irritation from mastication, or from heat and cold, and inflammation is the result. In such cases it is advisable to make an opening through the abraded surface, and destroy the nerve by oil of cloves, or canella, balsam of Commandeur, or by cauterization. The latter I prefer, as most prompt and certain, provided it be done three or four days after the opening is made, thus allowing the vessels of the pulp to be relieved from their congested condition. The tooth is then to be filled with metal.

[M. Jourdain seems to be unaware of what subsequent researches have well proven—the formation of a provisional or secondary dentine, which is deposited as a protective barrier, frequently in case of caries, and always in case of abrasion of the grinding surfaces. This formation being more highly organized and more closely analogous to true bone than primary dentine, is more sensitive: hence a frequent cause of the pain in such teeth. The remedy proposed by the author cannot, especially in the bicuspid and molar teeth, be relied upon as permanent, for teeth the vitality of which is thus destroyed will sooner or later become sources of trouble.]

§ 5.—*Epulis*.

Epulis is a fleshy tumor of the gum, which sometimes attains such a size as materially to affect speech and mastication. If dependant for its origin upon dental irritation, it may readily be cured by the removal of the cause. It may arise also from the presence of scurvy. The gums in this disease are loose and spongy, so much so, frequently, as to cause the teeth to drop out: again, the gums under its influence may take on a sudden growth, and thus form an *epulis*. Scorbutus is endemic in some northern countries—Norway for instance—and there *epulis* is very common.

Some propose to treat epulis in the same way as parulis: but while the one requires lancing for the discharge of contained matter, the other demands extirpation. It is allied to fungus and sarcoma, not to abscess. Fernel says, "Epulis is a fleshy excrescence of the gum, often the result of neglected or imperfectly discharged parulis, and varies in size from a pea to a pullet's egg. It may degenerate into cancer, as will be evinced by the occurrence of lancinating pains, in which case it must be touched neither with the knife nor cauter. But if it continue indolent and free from such pain, it may be removed by ligature, and the seat of the tumor touched with lunar caustic or vitriol, to prevent a recurrence, taking care not to do injury to the adjacent sound parts." These remarks, if compared with what we have said in a previous section upon parulis, will show clearly the difference between the two.

True epulis may resemble polypus, when attached by a narrow neck; or sarcoma, when by a broad base. Some place in this class certain hard, cartilaginous and scirrhus tumors; others again include varicose tumors of the gum. But these last differ from epulis, in the absence of all arterial pulsation, and in yielding to the pressure of the finger, the mark of which they retain: either symptom will suffice for diagnosis. Other particulars connected with epulis will appear as we report the cases which we propose to give in illustration.

CASE I, (Felix Plater.)—For four years I have had a cancerous tumor, as large as a nutmeg, attached by a slender pedicle to the back part of the mouth, not painful, nor in the way of the teeth. A vesicle, filled with dark blood, occasionally forms, giving some difficulty in eating, until the compression caused by the food ruptures it. As it gives me so little annoyance, I have declined having it cut away, for fear of troublesome hemorrhage.

This is rather a varicose tumor than an epulis, the occasional bloody vesicle tending probably to prevent its increase. The hemorrhage feared by Plater might be prevented by the use of the ligature, which acts by the arrest of circulation and consequent sphacelus, and is peculiarly adapted to pedunculated

tumors. When attached by a broad base, the only resort, according to Ambrose Paré and Fabricius de Aqua., is the knife, followed by cautery to arrest hemorrhage. Cautery alone might suffice, if frequently repeated, but this is apt to cause too great inflammation of the parts. When, from its size, duration, or other circumstances, adhesion to the periosteum is suspected, then it becomes absolutely necessary to follow the knife by the actual cautery.

CASE II.—In 1767, a young woman, aged eighteen, had suffered frequently from alveolar abscess, caused by some decayed teeth in the lower jaw, especially a left molar. At length a fungous mass, about the size of a crown piece, formed around the fistula, which resulted from these different abscesses. It pressed against the cheek, was in the way of the closure of the teeth, and was attached to the gum in such manner as to preclude the use of the ligature.

I first extracted the roots of the molar tooth, found them tipped with a fleshy mass, the transverse alveolar septum destroyed, and the alveolar wall, next to the epulis, pierced with holes. Fearful of hemorrhage I resorted to the cautery, introducing it at the centre of the tumor and passing it around so as to destroy its connection with the alveolus; then dressed it with dry lint and prescribed a detersive gargle. A few days after I removed a carious fragment of bone and then cut around the fistulous centre of the tumor, with a sharp edged cautery, and dressed the wound as above. The case progressed very favorably, and in two months was dismissed. Some may think my measures rather severe, but none other would have sufficed for the double purpose of stopping the bleeding and destroying the caries.

CASE III.—In 1771, Mons. A. Petit sent to me a lady forty-five years of age, who had for a long time had an epulis on the right side above the two last molares, the pedicle seeming to be attached directly over the first molar which was much decayed. This tooth I extracted, and arrested the hemorrhage by compression. I then put a ligature around the neck of the tumor, by gradually tightening which, I caused it to drop off in six days. I deemed it prudent to cauterize the portion of the pedi-

cle remaining to prevent the return of the disease. No exfoliation of bone took place.

The following dentifrice is proposed by Scultet, to be used after the excision of an epulis by ligature: porcelain clay, aloes wood, yellow sandal, iris root, āā ȝj; musk, Ɖj; to be made into a powder, and to each ounce adding a drachm of pulverized alum. This dentifrice to be used in connection with an astringent mouth-wash. In the case of soft, spongy gums, we think this might prove a very good tonic and astringent, if used after each meal.

CASE IV, (Wanderviel.)—About thirty-six years ago I was called by A. Baringue, surgeon, to see a woman who had a large tumor over the molar teeth. The mouth was drawn up on the opposite side, as if by spasm. She was at first reluctant to have this tumor removed; but at length, finding that it increased so as to interfere with mastication, she consented. We used for the purpose a brass wire, by the gradual tightening of which, the tumor was in a few days separated. It was of a cartilaginous hardness.

In similar cases, where the vessels are not varicose, the knife could be used with success, followed, if necessary, by the cautery for the arrest of hemorrhage, and after this by spirituous and desiccant, but not suppurative, dressings.

Balduinus mentions the case of a woman, aged forty-five, who had a cartilaginous tumor on the gum of the left side, which, at first no larger than a wart, grew to the size of a pomegranate, and projected from the mouth, in such a way as greatly to interfere with the taking of either solid or liquid nourishment. It was successfully removed by ligature.

Ambrose Paré speaks of such excrescences that were of a cartilaginous and almost osseous hardness, which he has removed by ligature, followed by the actual cautery. "I have," says this author, "removed them when so large as partially to project from the mouth, rendering the aspect hideous. It was such a tumor, the livid appearance of which had deterred other surgeons from operating, and in which I had noticed a deficient sensibility, that I succeeded in curing by repeated excisions

and cauterizations. The recurrence of disease in this case, in spite of the cautery, was due to some implication of the subjacent bone. When not thus complicated or deeply rooted, their cure is simple."

Blasius, Daniel, Scultet, Donatus and Albucassis, all speak of the use of the ligature. The latter recommends the cautery in case of its failure, and in fact gives, in actual practice, almost exclusive preference to it over the ligature, or any other means. A case of fatal hemorrhage, reported by Zacutus Luzitanus: "after the excision of a tumor on the lower jaw, in a woman of melancholic temperament, which, in the course of a year, had reached the size of an egg, was very painful, and discharged from a small ulcerated surface an offensive matter," should make us cautious in the use of knife or ligature in all such cases.

The ulcerated state of the tumor, in this case of Luzitanus, gives strong suspicion of the existence of caries; in which event the exclusive use of the cautery, directed at once to the diseased bone, would probably have insured the gradual disappearance of the tumor, by causing the exfoliation of the caries. In a similar case, where the tumor was just below the four incisores, and complicated with two fistulas, I used first a sharp edged cautery, and then applied the hot iron to the carious bone, repeating it seventeen times in three months; towards the end of the fourth month the tumor had disappeared.

The *Surgeon Dentist*, vol. i, f. 190, speaks of two very large excrescences of the gums; also of some which gradually acquired an enormous size, had an osseous and almost stony hardness, and were intimately and firmly united to the bone. In the treatment of such, which seem to come under the class of exostoses, the cutting forceps, chisels, gouges, &c., become necessary; prompt attention must also be given to the removal, if possible, of the exciting or essential cause; the state of the bone should also be ascertained, that no harm be done either by useless rashness or imprudent delay. The following, from Manget, is worthy of notice.

CASE V, (Manget.)—Jean N. Marschalac, surgeon, was consulted, in 1690, by a lady, over sixty years of age, large

and corpulent, who had an epulis between two front teeth, as large as an egg. The teeth between which it originated had separated to the distance of an inch, and projected from the alveolus so as to prevent the closure of the mouth, and thus gave rise to much deformity. The best surgeons and physicians had been consulted, and had tried in vain all sorts of applications, and among them the cautery. Mons. M. at length, recollecting an operation which had been performed in a similar case by his father, proposed it in the present instance. After due consultation it was decided upon, and the patient put under a course of preparatory treatment. The base of the tumor was then encircled by a very soft untempered iron wire, which was tightened gradually each day, by means of a pair of pincers. The separation of several pieces of the jaw-bone, on the ninth day, interfered with the continuance of this process, and the removal of the tumor was completed by a knife made for the purpose. Desiccant and astringent dressings were used, and on the third day eight or nine pieces of bone were discharged from the seat of the tumor. The carious condition of the bone was treated by the usual remedies, and the lady was restored to full health. This case differs from Case 4, as given by Wanderviel, in the substitution of an iron for a brass wire, and in the additional complication of caries, a feature which places the two in a very different light.

§ 6.—*Sarcoma.*

The term epulis, in the opinion of distinguished ancient authors, has been often used in a too extended sense, including tumors which more properly come under the name of sarcoma. Eustachius speaks of certain calcareous concretions deposited around the neck of the tooth, attended by a hard, red and irregularly swollen state of the edge of the gum,* to which Manget gives

* Manget seems to consider the first as the result of the second; whereas, the state of the gum is more probably the result of the irritating presence of the salivary calculus, which, in the language of Manget, "loosens the bands that connect the tooth to its socket."—*Tr.*

the name sarcoma, or, according to Celsus, *parontidas*,* a term peculiarly applicable to such tumors. Manget distinguishes the more indurated or cartilaginous forms of sarcoma, by the name *sclero-sarcoma*, (from σκληρος, hard.) Their origin, progress and treatment is much the same, usually they are unattended by any inflammatory symptoms, in their earlier stages, though, subsequently, they may degenerate into cancer.

CASES I, II and III.—A wart-like excrescence appeared over the root of a first molar, in a lady, aged thirty, which gradually grew to the size of a bean. Certain mild applications had been used, but without effect; the tooth was changed from its natural position, and on one occasion a very free hemorrhage took place—an untoward event in her then *enciente* condition. Some time after her confinement I removed this tumor, which had annoyed her for about a year, by a judicious employment of cutting instruments and cautery.

Subsequently I removed from the mouth of a child, eight years old, by means of a cutting edged cauterant, a similar scirrhus tumor of smaller size, which had been pronounced by several distinguished surgeons incurable.

A young girl was brought to me with the right side of the lower jaw prodigiously swollen, and the bone around the second molar much diseased. The touch of a metallic probe gave forth a sound as if from a cracked bell. The alveolus was very thin, and I advised the extraction of the tooth, which was readily done by the mother of the girl. I then cut away the tumor, which became thus exposed, and applied the cautery three times at proper intervals. The face remained swollen for a long time after the cure of the alveolar diseased, but at length gradually subsided under proper treatment.

Sclero-sarcoma, of which Manget speaks, is not always dependent on caries or parulis; it may be caused by a morbid state of the fluids generally, and especially in scorbutic persons, where the teeth are sound and free from tartar. The disease commences by the recession of the gum from around the

* From παρα, near, or around; οδοιτες, the teeth.

neck of the teeth, followed by tumefaction ; giving the appearance of a cup-like depression, in the centre of which is placed the tooth, more or less loosened and deranged in position. Upon touching the teeth they seem as if placed in a yielding fungous mass, this touch being frequently followed by a fetid hemorrhage. Dull, uneasy pains are often felt ; the maxillary bone is more or less swollen, and the affected tooth is finally distorted from its natural position. Several adjoining teeth may become thus involved, in which case the intervals between the teeth are concerned in the disease. Sclero-sarcoma, thus described, is essentially an ulcerative vegetation of the alveolar periosteum, affecting the roots of the teeth, and, to a less degree, the maxillary bone : it must be distinguished from sarcoma or epulis, as caused by dental caries. In fact, the alveolar septa become often, in this disease, softened or carnified ; in which case, the timely extraction of the tooth often brings about the cure, especially if followed by hemorrhage. If, however, the socket has an unhealthy, sarcomatous appearance, the cautery will be necessary to the completion of the cure—care being had in all cases that the cauterant be not too freely used, and irritation thus set up. If the sarcoma have formed attachment to the edge of the gum, then it will be necessary, in its removal, to excise a portion of the sound parts : due attention must be paid to the state of the bone.

Sclero-sarcoma is not always favorable in its progress and issue. The deeper seated variety is sometimes the first development of cancerous disease. The unsuspecting patient, feeling uneasiness, rather than real pain, notices the elongation and loosening of the teeth, and at last submits to their extraction. Thereupon, the disease, if proceeding from a cancerous action, frequently makes rapid progress. It would, however, be incorrect to attribute this increase of diseased action to the simple removal of the tooth.

CASE. V.*—An individual who for some years had felt uneasi-

* Case 4 is a simple epulis, following the extraction of a tooth, first imperfectly cut out by a quack, afterwards successfully removed by ligature.—*Tr.*

ness in the two left lower molares, which were rather loose, and the gum around them swollen, was suddenly seized, while walking by the river one damp day, with a numbness of the whole side of the face. The jaw swelled, and the teeth became greatly elongated, and finally were so much deranged as to require extraction. This operation required but little force, and was followed by a profuse hemorrhage; and on the third day a fungus appeared at the bottom of the sockets, advanced to the edge of the gum, united with the gum, and resisted every application of caustic, vitriol, &c., for its destruction.

The patient, under these circumstances, consulted the late M. Morand, who advised with me. The patient had a good appetite, slept well, and the functions generally were well performed; absence of pain, and the uniform surface of the tumor, were favorable symptoms, and prevented any suspicion of cancer, unless excited by injudicious treatment. The plan of treatment which I proposed, and which was deemed by M. Morand as the only proper one under the circumstances, was the removal of the tumor by means of the knife, associating also the cautery, for the arrest of hemorrhage, the complete destruction of the radical fibres, and to hasten the exfoliation of the bone, in case it should be found carious. The difficulties of this painful operation were lessened by the fortitude of the patient. After the cautery, I used dry dressings, and subsequently emollient plants; gargles were not neglected, and an anti-febrile regimen was adopted. Decoctions of the most received anti-scorbutic plants were used, and occasional purgatives: also liquid nourishment, to the exclusion of solid food. In four days healthy suppuration was established, which I aided by a suitable digestive. There was slight exfoliation of bone, and soon the wound assumed a good aspect; at the end of two months the cure was completed.

The slow treatment by caustics was here avoided, as tending to excite cancerous action. The plan of the ancients, here adopted, may serve as a useful guide to modern practitioners, who too often abandon, without reason, the example of their predecessors.

CASE VI, (Manget.)—A man aged forty, subject from time to time to inflammatory attacks about the teeth, had a tumor over a right lower molar, which gave pain, gradually increased, and deranged the position of the tooth. The loosened tooth was readily extracted, but instead of removing the disease, it seemed rather to give room for the granular excrescences, which, in spite of the vitriol and spirit of nitre of the surgeon, grew with great vigor, till the tumor equalled in size an infant's head, resembling in appearance a large cluster of grapes. The face, of course, was prodigiously swollen by so monstrous a tumor. In color, it was partly pale, partly livid, and with a very offensive odor. In failure of all vulnerary and balsamic remedies, the cautery was resorted to; but even this did not remove the root of the disease. The bone was found extensively carious, and from this centre were continually reproduced granulations, which in twenty-four hours would replace what had cost tedious and painful burnings to destroy. A wasting hectic reduced the patient to a mere skeleton, yet with sufficient strength to bear up under the operations performed. Wepser was consulted, and gave as his opinion that the disease was not cancerous, but more properly a fungus growing from carious bone. He advised the continuance of the cautery, also certain desiccants suited to the pituitous, phlegmatic temperament of the patient,* with vulnerary decoctions, and from time to time gentle purgatives. But the seat of the disease advanced deeper and deeper, and the patient, worn out with suffering, died, Jan. 28, 1690, after a severe colic, attended by frequent faintings. The bone of the lower jaw was found, on examination, to be extensively carious and very brittle. The tumor, partly fleshy, partly glandular, or, as Wepser expresses it, fungous, embraced the whole bone, as far back as the articulation, which it had completely dislocated. The autopsy was not carried farther.

* The detail of Manget's advice is prolix, and of no practical value to the student of the present day; it is therefore omitted. The curious must refer to the original.—*Tr.*

§ 7.—*Fungous State of the Gums.*

M. Fauchard, who stands among surgeon dentists justly pre-eminent, describes with explicitness that swelling of the gums which arises from accumulations of tartar around the necks of the teeth, and gives directions, mechanical and pharmaceutical, for its cure. The success of these means has been well recognized, and the subject has been so fully dwelt upon, as to demand no further notice at my hands.

The fungus of which I now speak is, in almost all cases, the outward manifestation of internal or constitutional disease, especially of scorbutus, or those affections which are somewhat analogous thereto, as herpes, secondary syphilis, &c. It may be caused, also, by the incautious use of mercury. The remedy, in such case, is simple scarification with the point of the lancet, and perhaps the removal, by scissors, bistoury, or by cautery, of such portions as may assume a sphacelated appearance. This mercurial fungus may, according to its duration, cause the loss of the teeth, and even of the alveolar processes; but when simple, and not complicated with any vitiated constitutional taint, it admits, as I have said, of ready cure.

Fabricius de Aquapendente and other ancient writers, and after these some more modern ones, advocate strongly the use of the cautery in this disease. I am free to confess that, except in cases where the affection was purely local, I have not found it so beneficial; on the contrary, failing to remove the constitutional vitiation, it tended rather, by the irritation necessarily produced, to aggravate the disease. During five years passed in the Hotel Dieu, and at Saint Landry, where I met many remarkable cases of fungus among scorbutic patients of all classes, I can recal no single instance where the cautery was resorted to, unless the bone happened to be carious, or otherwise altered. The use of internal, with suitable external remedies, was attended with the happiest results. Of this form of fungus I shall give but two examples.

CASE I.—Some years since a person was treated by mercury

for a violent syphilis, and so far as this disease was concerned, successfully; but the gums became so swollen in either jaw, as completely to envelop the teeth and bleed on the slightest touch. Scarifications, tonic and astringent gargles, and even the cautery, were used without any effect, and the patient was sent to me. Regarding the case as the result of mercurialization, I directed three or four gentle purgatives, and the use of whey, together with the decoction of certain anti-scorbutic plants. Meanwhile I cut away the fungous gum, and bathed the parts in camphorated brandy, directing the daily use of a stimulant gargle, scurvy grass, &c. By this treatment, internal and external, the fever abated, strength and appetite returned, and in fifteen days the gums were so far healed as no longer to require my care. I continued the whey and the gargles for about a month longer, with an occasional purgative. Shortly after this I saw the patient and the teeth had regained their original firmness, and the gums were perfectly healthy.

CASE II.—M. Poissonnier sent me a case of well marked scurvy, in which the gums were swollen, much as in the above case, the teeth very loose and the mouth exhaling a very offensive odor. The symptoms indicated incipient gangrene of the gum, and caries of the bone. I cut away all the fungous gum from the lower jaw, and touched the parts with camphorated brandy and sal ammoniac, prescribing also spirit of scurvy grass and a decoction of bramble leaves, with which frequently to bathe the parts operated upon. In consequence of the weakness of the patient I delayed the operation upon the upper jaw for a few days. In a month's time the parts were restored to a healthy condition.

If caries be present the altered bone must be exposed, being careful to aid, not to interfere with, nature: remembering also that there is a peculiar liability to osseous softening in scorbutic persons. The scorbutic gangrene of infants will throw light on this subject. It must be carefully distinguished from epulis and parulis, consequent on dental disease.

§ 8.—*Scirrhus and Cancer of the Gums.*

Of these glandular diseases, scirrhus is usually the first stage of cancer, and often proves fatal, simply from mal-treatment. Discutients are dangerous—emollients are preferable; recourse is sometimes had to maturatives, especially in indolent cases; but true scirrhus—I speak not of simple induration of the gum, which some have thus called—demands extirpation by the knife or cautery; caustics are objectionable.

CASE I.—[The description and *rationale* of treatment of this case, is so mixed up with the exploded notions of the old humoralists about black bile, &c. that its literal translation would be both prolix and unprofitable. It is a case of so called scirrho-cancerous tumor of the right side of the lower jaw, irregular, livid, and discharging from some of its prominences, which were slightly painful, a fetid humor—the patient young, and of a bilious temperament. Venesection, cautery and the other surgical remedies resorted to failed to make a cure, but kept the tumor so far in check as to make its presence endurable. The conclusion drawn from the case, is that a firmly attached cancerous tumor will most usually resist the efforts of art.]

CASE. II, (Felix Plater.)—A young clerk, noticed for some four months a gradual loosening of two incisores and the canine of the lower jaw, and at last removed them readily with his fingers. Much pain was afterwards felt, some fragments of the alveolus came away and there was active ulceration of the gum and lips. I applied a suitable mouth wash—chiefly my *eau verte*—and in a short time the disease was perfectly healed, leaving a cicatrix, which distorted the mouth a little.

The prompt and simple cure of this case proves that it was not what Plater calls it—a cancerous ulceration. The sad issue of most cases of cancer of the lip, has been shown in a previous section. Probably this case may be classed among the accidents following abscess of the pulp cavity, an account of which is given in another part of this work.

CHAPTER NINTH.

SPECIAL DISEASES OF THE GUMS.

§ 1.—*Erosion of the Gums.*

THIS name is given to numerous small erosive and confluent ulcers of the gums, quite distinct from *apthæ*, of which I shall speak hereafter, and also from the scorbutic gangrene of infants, although frequently found in scorbutic patients. It would seem to originate in a putrid acescent fermentation, set up and continued in the stomach of infants. The fever, convulsive startings in sleep, batting of the eye-lids when awake, griping pains and disordered dejections, together with a constant inclination to scratch the nose, indicate also the presence of worms. The disease is very serious, if neglected, and is often fatal.

Apthæ, attendant upon and caused by difficult dentition, is a comparatively simple disease, and may disappear spontaneously after the eruption of the teeth. Erosion, however, takes place independently of dentition, is a more serious disease, requiring more prompt and active treatment, and often tends to assume a gangrenous character, presenting, in this latter case, a resemblance to the eschar made by the cautery. It begins frequently around the necks of the teeth, causing the exposure of these, and often of the bone, which may be found carious; also it may commence between the gum and the lips or cheek, usually first attacking the parts around the lower incisores. The pale, viscid and offensive matter from these eroded spots will be found to redden the syrup of violets or tinc-

ture of turnsole. If the disease fails to yield to remedies, internal or external, it must prove fatal.

CASE I, (Hildan.)—An infant of Dusseldorp, long tormented with an erosion of the gums, which would yield to no treatment, finally died. An autopsy revealed the existence of an immense number of worms in the intestinal canal. Hildan comments upon the probable connection between the worms and the disease of the gums, and remarks that this erosion, if of long continuance, is almost invariably indicative of some concealed disorder, which should be sought for, and to which treatment should be directed.

§ 2.—*Scorbutic Gangrene of the Gums.*

This disease, peculiar to children, is often the result of a neglected erosion, and is very fatal. If sphacelus be once established, it is, in the opinion of Hildan, wholly incurable; in proof of which position he gives four cases. The first, (Case 1,) supervened upon recovery from an acute illness, in a child aged four years. The lips and gums were eroded as far as the nose; no treatment was availing. In the two next cases, (Case 2,) no remedy was omitted which it was thought could be serviceable; but fever, delirium, syncope, vomiting and dyspnea were present, and caused a fatal issue. Alike unfavorable was the third case, (Case 3,) and Hildan hence draws the caution against rash promises of cure, at the same time charging the surgeon to omit no probable means of relief.

CASE IV, (J. Munisk.)—I visited, not long since, an infant, two years old, who, for three months, had been afflicted with a quartan intermittent. Between the gum and upper lip I found a hollow ulcer, painful, hard, dark and offensive. Acescent aliments had given to the blood an acid character, which had been increased by the long continuance of the fever. The blood determined to this locality, rather than elsewhere, from the joint effect of the cold air of inspiration, and of the food retained between the teeth: the humors thus stagnating, became acid and corrosive, causing irritation and rupture of the

small fibres of the lips and gums; hence the depth, hardness and painful nature of the ulcer.*

Munisk differs from Hildan in regarding such affections as curable. He says that he has cured many infants whose cases were considered hopeless, by the same treatment used in the above case, to wit: Theriac, ʒ ijss; ægyptiac, ʒ jss; gum lac, and sal ammoniac, āḏij; tincture of scurvy grass, a small quantity—to be made into an ointment: mix with a little warm spirit of wine and bathe the part, and then apply a pledget of lint saturated with the same. The remarks of Saviard, however, on this subject has given us the most satisfaction.

He says, “of the varieties of scurvy, the one attacking the body generally, the other the mouth, the latter is far more common in infants than in adults, by reason of the tender and flexible nature of the parts attacked. It commits, in these early years, fearful ravages; spreading often to the muscles of the cheek, and causing perforations and irreparable loss of substance; again extending, despite all remedies, to the throat and causing death by suffocation. I have seen many cases where there were these perforations, cured by the use of pledgets soaked in brandy and ointment of styrax: I have also seen recoveries after a much greater loss of substance, involving large portions of the maxilla, but the disfigurement resulting was so terrible, that it is questionable if death were not preferable to life under such circumstances.†

CASE V, (Wepser.)—In an infant, aged two years, of noble birth, whose health had for three months been bad, the gums became swollen and bled readily. Small tumors, black, livid, and red, made their appearance, and would burst, discharging much blood, which immediately coagulated. If seated over a tooth, these tumors would increase until the eruption of the

* Pathological expositions, of which this is a fair specimen, occurring elsewhere throughout the work, I have thought best either to state concisely or omit altogether, as unsuited to the present more advanced state of medical science.—*Tr.*

† The next two or three pages is taken up with a defence by M. Jourdain, of M. Saviard, against the misrepresentations of some cotemporary, and can be of no possible interest or profit to the reader.—*Tr.*

tooth and then disappear. No treatment proved of any avail: gangrene supervened on the right side, formed a large foul ulcer the size of a dollar, and the patient died; continuing, however, to manifest its usual vivacity and complaining of no pain.

CASE VI.—In 1768, a poor child, over three years of age, was brought to me with gums greatly swollen, bloody and dark; teeth all loosened, and mouth so painful as to prevent the introduction of food. The breath was cadaverous, the face puffed, and of a leaden hue; the ancles, calves and thighs covered with dark spots, and the anus and pudenda excoriated by the acrid discharges.

I removed all the parts which seemed gangrenous, and used a lotion of rose honey, vitriol, camphor and sal ammoniac, in brandy; giving on the third day a purge of chickory, senna and an anti-scorbutic syrup, and directing herb teas for nourishment, and for a drink, lemonade, sweetened with anti-scorbutic syrup. On the eighth day, the mouth assumed a better appearance; the two lower incisores loosened and came out, with a small portion of the alveolus. I then used a mouth wash of the above lotion, with infusion of cinchona. After the third week I used the cinchona alone, gave an occasional purge and applied camphorated fomentations to the anus and pudenda. The patient gradually recovered its vivacity; at the end of two months broths and soup were allowed, but, as yet, no solid food. As cherries, and currants ripened, these, well ripe, were allowed in moderation.

CASE VII.—In 1771, a child, aged four years, was brought to me with eyes heavy, complexion livid, face swollen, belly hard and constipated. The gums were dark, bloody and covered with a foul sordes. The four upper incisores were so loose that I readily removed them, together with a portion of the alveolus, with my fingers. There was much troublesome eructation and retching.

I touched the gum with the lotion given in Case 6, introducing lint, saturated with plantain decoction, into the space left by the removal of the incisores, and directed frequent sponging of the part with a decoction of Peruvian bark. I pre-

scribed, also, linseed injections and fomentations over the belly, with the happiest result, and for the cure of the retching, directed a solution of tartar emetic, sweetened with lemon syrup. After twice vomiting, the medicine was suspended, and the remainder of the antimony given in smaller doses to excite purging.

The digestive system being thus rectified, whey was given together with the juice of sour oranges. Fresh applications of lint were made to the gums, and the canine teeth, with their sockets, were detached. Occasional purgatives were used, and a regimen, as in the preceding case. At the end of eleven weeks the child was entrusted to its parents, with directions to observe a generous and wholesome diet. A slight depression marked the loss of alveolar substance, but I am not informed whether the permanent teeth ever came to replace the temporary ones thus lost by disease.

§3.—*Conjoined Suppuration of the Alveoli and Gums.*

This is a scorbutic affection to which adults are liable, in which the gums and alveoli suppurate, and the alveolo-dental periosteum is destroyed: the teeth loosen and fall out, although they may be perfectly free from decay, after which, the gums regain their healthy condition. The disease may be of four or five years duration, and will frequently cause the loss of nearly all the teeth. By those who seek to extol some pretended elixir, or sovereign specific, it is regarded as a purely local affection.

M. Fauchard was the first to describe this disease, and his remarks evince a consummate experience. He speaks of it as "a species of scorbutus, confined to the gums, alveoli and teeth, to which others are liable, besides those with gums, soft, livid, and swollen. It may be known by the escape, on pressure, of a whitish viscid pus from around the neck of the tooth. This pus forms between the gum and alveolus, or between the alveolus and the tooth: more frequently on the outside than the inside of the alveolar arch, in the lower than in the upper jaw, in the incisores and canines than in the molares.

The slight efficacy of the usual anti-scorbutic remedies, would argue a local rather than a constitutional cause. I have also observed, that the loss of the teeth, involved in this disease, was followed by the healing of the gum, and hence I have concluded that the only radical cure, is the extraction of such teeth."

These remarks show a faithful observer; with good reason does he pronounce the disease incurable, when it has reached a certain point. Those who think they have made cures by scarifications, &c., by cauterly, issues, and the like, have confounded this with suppurative fungus of the gum alone. I have seen many cases treated by these so styled successful remedies, and I may safely say I have yet to see the first cure performed. In the cases of a celebrated actress, and of Mons. l'Abbe M. L., empiric remedies were of no benefit; again—in the cases of a gentleman of rank, and of a lady, who, in her anxiety to save her teeth, tried baths, blisters, setons, &c.—the more approved remedies of celebrated professional men were equally unavailing.

I had been led to regard this disease as arising from some vitiation of the fluids, in consequence of the salutary effect of crisp and astringent remedies, in the case of a certain lady. But scarce had she congratulated herself upon her cure, when she began, for the first time in her life, to experience serious symptoms in her breast, tingling, heat and pain in the chest, with bloody expectoration. Though the teeth were firm, the gums had receded from their necks, and had a very meagre appearance; also at the base of the lower jaw there was an unnatural puffiness, with, at times, a chilling sensation, shooting through either jaw. M. Bouvard insisted upon the necessity of re-establishing the suppuration of the gums, and though the patient was exceedingly anxious to preserve her teeth, I could not assume the responsibility of the risk of gratifying her wishes. Suppuration was restored, became exceedingly abundant and was treated by the usual appropriate remedies; the pectoral symptoms were judiciously treated, and the patient was eventually restored to entire health, after the loss of many teeth.

I have in hand, at the present time, a lady, who, after two years of good health, subsequent to the cure of some constitutional vitiation, was attacked by this disease. She has already lost two molares, and now wears an issue with a view to prevent any further loss. But I will not multiply examples. If any one can deem this a disease of simple local origin, it is more than I am able to do.

Mental exhaustion, grief, errors in diet, suppression of hemorrhoids or other habitual discharges, metastasis of cutaneous diseases, &c., are among the causes of this affection. Rachitic persons are particularly liable to it. Young men of regular habits are not at all so; nor is it apt to occur in men who live temperately and are free from constitutional disease, until the age of forty-five or fifty—a time when various affections, according to differing hereditary or acquired tendencies are liable to arise. In females we oftener meet with it at the three critical epochs of life: first, the appearance of the catamenia, when by their arrest, or difficult flow, great derangement of the system takes place; secondly, during lactation, when suppression and metastasis of the mammary secretion may give rise to many grave disorders; thirdly, at what is emphatically termed the critical or turning point of woman's life, the total cessation of menstruation. Persons living in low, damp, marshy places; sailors who live exclusively on salt provision; all who are forced to a mode of living insufficiently nutritious; those who dwell in mines, or are constantly exposed to putrid miasmata; in fine, all causes which tend to the production of true scurvy, will equally dispose to this conjoined suppuration of the gums and alveoli.

What I have said, will show clearly the necessity of meeting this disease at the onset; that is, on the first appearance of the loosening of the teeth, softening of the gums, and the collection of that whitish offensive mucus, which ultimately causes minute ulceration around the necks of the teeth. This period is unfortunately too often permitted to pass without treatment.

As regards the cure which so generally follows the loss of the teeth, as mentioned by M. Fauchard, I consider it analo-

gous to certain eruptions, to boils, abscesses, &c., whereby nature seeks to relieve herself of some morbid humor, after the complete discharge of which the parts usually return to their original healthy condition. How difficult sometimes, nay, impossible, to continue the discharge from a blister, seton or issue, beyond a given time. In fine, our mode of living, certain hereditary tendencies, the suppression or diminution of some excretion, which, by its delay in the blood, becomes hurtful—all tend to the production of this disease, the humors of which redden the syrup of violets, and soften the alveolar tissues—circumstances regarded as peculiar to the scorbutic humor. Persons of serous, melancholic temperaments are especially liable to be attacked by conjoined suppuration of the gums and alveoli.

§ 4.—*Hemorrhage of the Gums.*

This may arise from the presence of scorbutic disease, or be the result of the suppression of some natural or habitual discharge, as catamenia, hemorrhoids, epistaxis, issues, old ulcers and the like. Though regarded as of small moment, they may occasionally prove fatal.

CASE I, (G. Hostius.)—The young wife of a pastor in my neighborhood, was suddenly siezed, in the seventh month of pregnancy, with a copious hemorrhage from the gums, which lasted without interruption for three weeks. Much blood was lost, and her unborn child was evidently in great danger. Bloody spots at last appeared over the whole body; and the use of sudorific baths was followed by great febrile action, especially in the upper part of the body and in the purple patches over the surface; the patient sunk under the disease. We see not why the sudorific baths should have been preferred. The pregnant state of the patient was no argument against venesection, astringents, or the use of anti-scorbutic remedies.

CASE II, (G. Hostius.)—A young woman, seized in March, 1622, with a continued fever, from which she was restored by suitable treatment, was taken in April, about the time of her

menstrual period, with a free epistaxis, followed by a constant secretion of blood from the surface of the gums. The bloody discharge turned on the bowels, and the patient, already reduced by previous sickness, sunk under the disease.

Dodoneus tells of a young girl of eighteen, who, during the delay of the menstrual discharge, had a vicarious secretion of blood from the corners of the eyes; also of another, who had a similar secretion from the gums. Donatus gives the case of a locksmith, with disease of the spleen, who discharged, in the space of twenty-four hours, eight pounds of blood from a single small vein in the gum. The pathology of these cases seems to be, a too great fluidity of the blood, together with a relaxed state of the mouths of the veins, and a loose, soft condition of the textures generally.

CHAPTER TENTH.

DISEASES OF THE TONGUE.

THE situation, size and structure of the tongue are well known. It is somewhat pyramidal in shape, thin at the sides, thick and elevated in the centre, coming to a point in front, below which part is a connecting fillet, the *frænum linguæ*. On its upper surface it is smooth and sometimes furrowed anteriorly, while its posterior portion is covered with numerous prominences, which are made up of nervous loops and small glands.* It is well supplied by arteries from the carotids, and by veins from the external jugulars, the most remarkable of which lie under the point of the tongue, and which I have sometimes successfully opened in cases of convulsions occurring during dentition in infants. Its nerves are from the fifth and ninth pairs, the former being, according to some, the motor, and the latter the gustatory nerves.

The tongue is exposed, occasionally, to wounds from cutting, piercing or bruising instruments; to tumors of all kinds, to abscess, scirrhus, cancer, carcinoma, fungus, &c.; to ulcers, excoriations, fistulas; also it may greatly increase in size, or become smaller, or be restrained in its motions by the *frænum*. Its peculiarity of structure and position precludes certain modes of treatment proper to other parts; for instance, in the arrest of hemorrhage, where the application of a compress or bandage is extremely difficult, other means must be used.

§ 1.—*Wounds of the Tongue.*

The tongue may be simply cut or wounded, or a part of its substance may be entirely or partially severed. If the separa-

* For the minute and correct anatomy of the tongue, vide Wilson's *Anatomy*, folio 462, Philadelphia, 1843.

tion be complete, reunion is impossible ; but if a portion be still adherent, it may, by a judicious use of sutures, be made to grow together.

CASE I.—I was called one day, says Parè, to a child of M. Jouet, three years old, who had fallen against a stone, and nearly severed the tongue. After a little hesitation, I united it by a suture above and below, directed the mother to give soft aliment, and in a few days the tongue was perfectly cured.

CASE II, (Parè.)—Jean Piet, carpenter, fell and nearly severed the end of his tongue by a sharp fragment of wood. He wished me to cut it completely off, but I reunited it by sutures, and in a short time continuity was established. I met with like success in the case of a son of M. de Marigny, President of the Inquisition.

CASE III, (Hildan.)—In 1587, a child, aged three years, fell and cut the tongue so deeply with the teeth, that but for the absence of two of them, it would have been completely severed. His restless impatience prevented the use of the ligature ; I was therefore forced to resort to frequent astringent gargles, keeping constantly in the mouth a syrup of the same nature. This plan, so simple, and in the present case so successful, would scarcely succeed where the extremity of the tongue was retained only by a single slight attachment. Hildan is not definite in describing the degree of attachment in this case ; Parè is more explicit.

M. Pibrac has proposed, as a substitute for the ligature, to invest the tongue with a kind of purse, which has been improved by M. le Blanc, Professor of Surgery in Orleans, so as to give free play to the frænum, and also not to interfere with the motions of the pharynx.

CASE IV, (Marchetis.) A person in the country had his lower jaw fractured by a bullet, and the parts at the base of the tongue wounded. It was very badly dressed by some village surgeon, so that in the progress of the cure the tongue became so tied down as to prevent its motion in any direction, and greatly hinder speech. To bring the tongue to its proper position, I severed its false attachments, and kept under the tongue a pledg-

et, medicated with white of egg and armenian bole, using, for the relief of the pain and inflammation, barley water and sometimes milk. It not unfrequently becomes necessary, in wounds or other disease about the base of the tongue, to guard against these adhesions: I have always succeeded by the use of a compress.

CASE V.—A child, seven years old, while playing one day with a needle, ran it into the tongue. I was called in, and at once withdrew the needle, and directed an emollient gargle. The tongue continued hard, painful and swollen, but gave no evidence of suppuration. The ordinary remedies failing, I tried bleeding of the ranine veins; lastly, I scarified the tongue with the point of a delicate lancet, and used a gargle of barley water, yolk of egg and rose honey; slight suppuration followed, the induration subsided, and in a few days the patient was well.

§ 2.—*Deformities, Injuries and Swellings of the Tongue, from Various Causes.*

Injury may accrue to the tongue not alone by direct violence, but also through the medium of the circumjacent parts, which themselves receive immediately the force of the blow or wound.

CASE I.—An individual, while sparring, was wounded in the right cheek by a foil, which struck the second lower molar, turned it inwards, and caused it to injure and inflame the tongue. Instead of extracting the tooth and scarifying the side of the tongue, as proposed, I replaced it in its socket, drew blood from the ranine vessel, and made a cure in a few days.

CASE II.—A lady, aged forty, in a fit of epilepsy, had the lower teeth pressed so violently upon by the upper ones, by reason of excessive muscular contraction, as to throw them inwards towards the tongue. After the fit, the mouth was found filled with blood, and the tongue so swollen as to be immovable. I was called in by M. Masquelier, the surgeon, and replaced the dislocated teeth. The state of the tongue demanding some more active and immediate measures than astringent gargles, it was deemed advisable to open the ranine ves-

sels, which was followed by a profuse hemorrhage, requiring styptics for its arrest. In a few days the tongue recovered its freedom of motion. These cases establish the benefit resulting from opening the ranine vessels, though some, we know not with what good reason, seem to prefer scarification.

Hippocrates, Bartolin, Fabricius, Parè, &c., have written much in support of the influence of the imagination during pregnancy, upon the fetus in utero. This idea is very prevalent among the people, nor is it altogether exploded within the profession. We shall give an instance of this mysterious imaginary influence.

CASE III, (Maurant.)—An infant was born with a tongue two inches thick, and projecting three fingers' breadth from the mouth—a deformity attributed to a longing felt by the mother, during gestation, for the tongue of a beef with which her husband, unknown to her, was regaling his friends. It was first noticed that the tongue was adherent to the gum of the lower jaw by a small tumor, the size of a bean. The surgeon would not sever this connection for fear of hemorrhage, and it grew as the child advanced in years, caused an increased prominence of the tongue, and was so closely united to that organ that they could not be distinguished apart. The tongue was thickest at its point of exit from the mouth, and there was a constant and profuse discharge of viscid saliva. At first the child had some difficulty in nursing, but as it grew older it could take food, solid as well as liquid, with ease; could speak, and even sing. The canines and incisores of second dentition never appeared; the lower jaw was also curved at its symphysis: thus a space was formed for the protruding tongue, whilst at the same time the molares of either side came in contact and permitted mastication. The patient had an unusual freedom of motion in the lower jaw.

Apart from the fear of hemorrhage, which might perhaps, in failure of other means, have been arrested by the application of ice, M. Maurant was fearful, and with some reason, that the operation might be followed by the development of cancerous action. As regards the cause assigned for this deformity, we

cannot better express our own views than in the words of Dr. James Blundel, of London. "The fetus, in all stages of its uterine life, has a distinct and separate circulation, performs within itself all necessary vital functions, holding the same or a similar relation to the mother that a plant does to the earth, and is therefore independent of any influence exerted simply through the imagination of the mother. The hog's heads, calves' feet, monkey's tails and fruit marks, ascribed to these fantasies, are therefore only so many ridiculous absurdities. Were the possibility of such an influence admissible, to what might not our race come in the course of four or five generations! what monstrous forms might we not constantly meet! for there are few women who have not their attention forcibly directed to some strange object during the course of their pregnancy." Again, what imagination of the mother shall cause an infant to have three or six fingers, an imperforate anus, apparent hermaphroditism, or such like irregularities? or at what time and how long during utero-gestation, is it asserted that this influence is possible? To say that it may be exerted at all times is absurd, and carries its own refutation in its very face. In truth, we can give no satisfactory explanation. We call them *lusus naturæ*, and know that they may be often transmitted from one generation to another. In the lower animals we meet with the same anomalies—shall we attribute these also to the power of the imagination?

CASE IV, (Helwigius.)—A woman, aged fifty, of a warm temperament, very subject to head-ache and catarrh, was seized, one damp day, with violent pain, followed immediately by great swelling of the tongue and palate. The tongue became so large that the patient could scarcely speak or swallow: the little prominences on its under surface were much enlarged and tortuous. I opened the sublingual veins, at the same time lanced the tumor, following the operation by gargles of warm water, vinegar and salt, and thus all trace of disease was removed.

Helwigius, Bartolin, Borellus and others give many interesting cases of enlargement of the tongue, together with the reme-

dies most suitable; but I shall omit any more extended notice of them.

§ 3.—*Congenital or Accidental Loss of the Tongue.*

Most anatomists regard the tongue as an organ absolutely essential to speech; but from several cases which I shall give, it will be seen that speech is possible in the absence of this member.

A child in the village of Montaigu, Lower Poitou, between five and six years old, was taken with a severe attack of small-pox, then epidemic and very virulent, in the course of which gangrene of the tongue took place, and the whole of that organ was lost, except a small portion at the base, near the hyoid bone. The appearance of the mouth was singular. In the lower jaw there was a double row of teeth, the first set still remaining, and the second set having appeared within the arch, owing perhaps to the absence of the restraining power of the tongue. To this same cause we might attribute also the flatness of the palate. The posterior opening of the mouth was extremely small, the uvula and tonsils unusually developed. Along the floor of the mouth were two remnants apparently of the genio-glossi muscle, which, running from before backwards, resembled somewhat a couple of leeches. This child acquired the faculty of speech, notwithstanding this serious loss; the other parts of the mouth being called, gradually and instinctively, into peculiar exercise in the process of articulation.

M. Bonamy, physician, of Nantes, gives a very similar case of loss of the tongue, from variolous gangrene, in a girl eight or nine years old, Marie Grélard. For three years her speech was entirely lost, after which she began to lisp, and at last to speak almost as distinctly as another, the only difficulty being in the utterance of a few consonants. Deglutition and mastication were readily performed, and her taste seemed unimpaired.

It should be remembered, in explanation of the above cases, that the voice is formed in the larynx, depending for certain

modifications of sound in speech, upon the various movements of all the parts of the mouth. It does not seem impossible that the loss of one of these organs of articulation should be made good by the peculiar and compensatory action of the rest. Taste, we know, is not confined to, nor in fact is it chiefly placed in, the tongue; therefore this sense is not necessarily lost.

Tulpius tells of a man whose tongue was cut out by pirates, who, after three years' silence, suddenly recovered his speech, under the influence of great fright during a thunder storm; nor is this the only case on record in which strong mental emotion has loosened the fetters of speech. We have another case reported by M. Antoine de Jussieu, in which most of the functions of the mouth were properly performed. In both of these cases, however, it was necessary to use the finger in forcing the food to the back part of the mouth. Ambrose Paré has delineated a contrivance for the restoration of perfect articulation; but it is applicable only in case of partial loss of the tongue. Those who wish further information on this subject, may consult a very interesting paper by M. Louis, in the fourteenth volume of the *Memoirs of the Royal Academy of Surgery*.

§ 4.—*Simple Tumors and Abscess of the Tongue.*

Tumors of all kinds are met with in the tongue, subject more or less to variations of development, from its peculiarity of structure and relation. A careful study of these varieties of lingual disease is very essential to the surgeon. The following cases will throw light on this subject.

CASE I, (Neckren.)—The wife of a sailor was, on the 19th of March, 1656, suddenly seized with a suffocating swelling at the commencement of the trachea. For some days previously she had been annoyed by great dryness of the fauces. From a peculiar noise heard, she conjectured that some part had burst, and in this was the more confirmed from the sudden swelling of the tongue, tonsils and palate. The swelling increased till at length I was sent for, at night, to relieve the imminent danger of suffocation.

For immediate relief, I prescribed gargles, friction ointment of the breast and chin, and emollient poultices. Afterwards, for the revulsion of the morbid matter, I used laxative injections, scarified cups to the shoulders, and blisters behind the ears. In failure of these, the disease becoming worse rather than better, I tried, at the suggestion of Dr. Vicq, depletion from the brachial and sublingual veins, and used also poultices and decoctions, to counteract an incipient gangrenous tendency. At last I made two long and deep incisions on either side of the tongue; a quantity of dark, impure and clotted blood escaped, respiration became at once free, and a complete cure soon followed.

The step last taken was evidently the one which should have been first practiced, instead of the useless and injurious measures adopted. Perhaps, if the ranine vessels had been opened at the outset, the after symptoms might have been prevented. It seems, however, that the symptoms of the case did not, in the judgment of Neckren, warrant the operation, although past experience had taught him its good effect in certain cases. There is in medicine much of this, what Hippocrates terms *experientia fallax*. That some constitutional vitiation existed in this case, reported by Neckren, would appear from the subsequent appearance of a large irregular tumor in the same place, which offered much hindrance to the functions of the mouth.

CASE II, (Ledel.)—The wife of a merchant of Thor, aged fifty-five, phlegmatic temperament, was seized, December, 1687, with severe head-ache and fever, dryness of the fauces, pain and swelling of the tongue. These symptoms were dissipated by bleeding the sublingual veins. In January, after imprudent exposure, the disease recurred; the tongue was prodigiously swollen and hard, there was constant ptialism, and the patient could scarcely speak, swallow or breathe. Various remedies having been ineffectually tried, I sought for the seat of the suspected suppuration, made an incision, discharged much matter, and in a few days the patient was perfectly healed.

CASE III, (Ludovic.)—A young man came to me with se-

vere pain and swelling in the tongue, which had commenced six days before, the probable result of a debauch. It was so much enlarged as to fill the whole mouth, and could not be thrust beyond the lips. Speech, of course, was very indistinct. I advised certain decoctions to be taken into the mouth, with a view to promote suppuration; and after the bursting of the tumor and discharge of the pus, which was very offensive, I directed healing gargles of rose, scabiosa and sanicle.

From the peculiar structure and position of the tongue, little can be done by art in hastening the suppurative process; when, however, this is once well established, art must be called in, in case its prompt discharge does not spontaneously take place; otherwise the matter may seek false channels and do much mischief. Emollient gargles may be used with advantage before the evacuation of the pus, and afterwards those of a detersive character; though the saliva alone is the best vulnerary, provided there be no vitiated constitutional taint.

If the tongue be irritated by irregular or carious teeth, the affection is very simple, and the remedy equally so. But if relief be sought by other means than the obvious one of removing the offending cause, what before was simple may be made to take on a serious and obstinate character.

CASE IV.—Manget gives the case of a venerable abbé, who had a tumor on the left side of the tongue near its middle portion, which was soft and livid, and about the size of a nut. He did not agree, with others, that there was any malignancy in the case, and attributed the color to the constant irritation of the teeth. Regarding it, therefore, as merely a relaxation of the lingual fibres, he rejected scarifications, ligatures and the like, and treated it with general constitutional remedies, and tonic and astringent gargles. By these means the tumor nearly disappeared, so that what before was extremely annoying, became very supportable.

Manget does not say whether the teeth were, by any peculiarity of arrangement, a source of irritation: in such case there would be, doubtless, a recurrence of the disease. He mentions having seen cases in which the whole tongue was

swollen so as entirely to prevent speech and deglutition; and speaks of venesection, purging, decoctions of hyssop, &c., scarified cups and section of the sublingual veins, as the most successful modes of treatment.

CASE V.—Some years since I was called, with the late M. Lucas, to see a young man, sixteen years old, whose tongue was much swollen, and covered also with numerous aphthæ. He could neither eat nor speak without great pain. On introducing the finger to detect if possible the cause of this pain, I felt several rough prominences behind a lower lateral incisor. I found that they were not calcular concretions, but more probably an exostosis of the tooth, since movement of the one affected the other. I first thought to remove these irregularities with the file; but, apart from the difficulty of the operation, I doubted if it would not give rise to a liability to caries. I therefore decided upon the extraction of the tooth with the osseous mass attached. The operation was a very difficult one, in consequence of the peculiar shape of the exostosis, which was armed with sharp projecting processes. After the removal of this offending substance, the tongue regained its natural healthy appearance.

§ 5.—*Meliceris*.

Meliceris is a roundish encysted tumor, free from pain, containing a fluid of about the consistence of honey, viscid, glutinous, and somewhat saline. Though most common in parts abounding in adipose tissue, it is occasionally met with in the tongue. From steatoma it may be distinguished by its shape, the latter being usually more flattened, irregular and resisting, and contains also a thicker substance, resembling suet. Meliceris is true or false: true, when it contains in its sack its peculiar honey-like fluid; false, when there is present a second fluid, serous, lymphatic, or sometimes puriform.

Complete destruction of its sack, together with a small roundish fleshy mass at the bottom of this sack, is necessary to the radical cure of meliceris. Caustics, escharotics and liga-

ture, elsewhere very suitable in the cure of meliceris, are, in the case of the tongue, from its structure and relation, inadmissible: the only resort is to the knife and actual cautery, followed by suitable gargles or lotions.

CASE I, (J. L. Petit.)—A lady had a very large tumor under the tongue, extending downwards between the genio-glossi and hyo-glossi muscles; it presented a prominence below the chin; extending upwards, it hid the tongue from view, and kept the mouth from closing: in speaking, eating or swallowing, it was a cause of severe pain, and the patient was forced to breathe altogether through the nose.

The patient would not consent to the use of the lancet, and M. Petit was therefore obliged to use a trochar, which he thrust into that part of the tumor projecting from the mouth. About a half pint of fluid, mingled with pus and coagulated lymph, was discharged, and the swelling was dissipated. But in fifteen days, as predicted by Mons. P., it commenced to grow again, and in a month was as large as ever. A second and a third time the trochar was used, the patient still being averse to any other measure. After this the tumor remained fistulous, was harder and more painful; puncture by the trochar, which was seven times repeated, did not give as great relief, and the discharge became gradually more thickened, and at last entirely purulent. In the intervals of operation the tumor continued to give pain and hinder the movements of the tongue. At the end of three months chills and feverishness supervened, giving suspicion of the absorption of pus, which caused M. P. to insist upon the necessity of a decisive operation. Introducing his bistoury into the fistula, he cut first from before backwards, then just as far in the opposite direction, thus giving ample space for the introduction of the finger to the bottom of the cavity. The walls of the fistula were at least three lines thick and very hard. Fortunately the direction of the sinus was to the left, and thus all chance of injury to the ranine vessels was avoided. Into this incision was placed a pledget of lint, retained by compress for twenty-four hours. For four or five days pledgets were renewed until they could no longer be

retained. The cavity granulated well, and needed no other sanative than the saliva with which it was continually bathed, unless it were, perhaps, a little of Lanfranc's collyrium, balsam of Commandeur, or some detergent gargle.

Very similar in point of treatment to this case of false meliceris, is one given by Marchetis.

CASE III, (Marchetis.)—A monk had a melicerous tumor under the tongue, which, commencing at the ranular prominences, had gradually gained the size of an egg, extending to the right along the course of the carotid, towards the pharynx. It pressed so against the trachea and esophagus, that but for the lancing of the tumor every month, there would have been great danger of death from the interruption of respiration and deglutition. Simple incision of the tumor being followed by no permanent relief, the patient sought me at Padua, and placed himself under my care.

I began by giving revulsives, such as purgatives, bleeding and the like: I then incised the tumor at its lower portion, burst a number of the branches of the ranine veins, and sought to cut off the nourishment of the sack of the tumor, and thus cause it to wither away. Into the incision I placed a long and thick tent. On the next day I made a second incision towards the posterior termination of the tumor, and into this also placed a tent, saturated as was the first, with white of egg, adding powdered dragon's-blood and bole Armenian to arrest the hemorrhage. On the sixth day I cauterized the cyst with the hot iron, and used a digestive to promote the separation of the eschar. As the pus became more healthy, I used ointment of betony, making the tents daily shorter, and on the inside using lint powdered with burnt stag's horn and red earth. By these means a cure was effected in forty days, without any recurrence of disease.

§ 6.—*Scirrhus and Fleshy Tumors.*

Of this class are tumors of varying character; sometimes wholly scirrhus, or else wholly fleshy; at other times both

scirrhus and fleshy. We shall give a few cases in illustration.

CASE I, (Marchetis.)—A Veronese nobleman had, under the anterior part of the tongue, a solid fleshy tumor, about as large as a filbert, rather scirrhus in its character, without pain unless irritated by medicinals, but interfering considerably with the free movement of the tongue. From the hardness of the tumor the knife alone was inefficient; I, therefore, after a preparatory purging, extirpated it by knife and cautery jointly, using astringent powders with white of egg and anodynes to keep down inflammation. In two months the patient was cured.

CASE II, (Wepser.)—An infant had, on the fore part of the tongue, a tumor about the size of a farthing. By the use of certain liniments it was dissipated, but reappeared under the tongue three times its former size. The remedies of M. Hubert failing, Wepser was consulted, and replied “that the tumor seemed to be capular, and was perhaps a ranula. If circumscribed and not very movable, it would be proper to cut deeply, avoiding important veins, and press out the contained fluid; then cauterize the sack with the hot iron, which was more efficient than escharotics in preventing a recurrence. The after treatment should consist simply of rose-honey, avoiding all acrid substances as dangerous at so young an age.

Though the knife and the actual cautery are so useful in many cases, there are instances in which the ligature may be advantageously applied, as in the following:

CASE III.—M. Godard, physician, was called to see a female, forty-five years old, whose general health was very good, but who had, at the base of the tongue, a pedunculated tumor, in size and shape like a nutmeg. Its position interfered greatly with deglutition, and its presence was a constant source of irritation to the pharyngeal muscles. Its peculiar shape pointed at once to the ligature as the best method for its removal. On the fourth day the patient swallowed the tumor while drinking some soup, the breath meanwhile having grown very offensive, and the other usual symptoms occurring of gangrene by strangulation. Thus the tumor was removed simply and without any untoward accident.

§ 7.—*Cancerous and Carcinomatous Tumors and Ulcers.*

To what I have previously said regarding cancerous tumors, and the inefficiency of art to cure them, I would here add that cancers of the tongue have ever been regarded, from circumstances of structure and position, as peculiarly incurable—the knife and escharotics tending rather to aggravate the disease and shorten the life of the patient, especially if ulceration have taken place. Hildan, in his protest against escharotics, gives a lamentable case of the complete destruction of a cancerous breast, and the death of the patient, from the use of the Egyptian ointment.* He urges an exclusively palliative treatment.

CASE I, (F. Plater.)—An individual came to me with a number of hard red tubercles on the surface of his tongue, crowded together, and very much resembling the excrescences of elephantiasis. The lips of this person were partially ulcerated, with edges inverted: altogether the symptoms were those of a decidedly carcinomatous diathesis. I prescribed a desiccant mouth wash, and the persevering use of my *eau verte*, composed of arsenic and verdigris. The swellings disappeared from the tongue, nor did they again return.†

It is well known that for some time the extract of hemlock enjoyed a great reputation in the cure of cancerous diseases. This reputation was doubtless based upon the cure of certain cases of scirrhus enlargement, unaccompanied by any carcinomatous tendency. The best surgeons and physicians do not now give to this medicine any such desirable virtue; yet there are still those who place great reliance upon cicuta in cancerous tumors—are they really cancerous? The following is a case in point.

* Verdigris and vinegar form its base.

† M. Jourdain remarks, in a note, on the danger of Plater's remedy, and then observes, that the treatment is only palliative, since in the detail of the case there is no evidence of complete cure. He adds a doubt as to the power of a remedy, thus irritating rather than soothing, to cure a decided cancer, and argues that a disease of internal origin cannot thus be cured by external means. None of these remarks seem to us to detract from the above case, so far as the weight of this single instance goes.—*Tr.*

CASE II.—A young girl was for two years troubled with head-ache, which was much aggravated at the menstrual periods. This at length passed away, and then every month she had swelling of the palate, salivary glands and tongue. These were dissipated by suitable remedies, but there remained a permanent scirrhus tumor of the tongue, about as large as a nut, not painful but annoying—the catamenia meanwhile continuing to be scant. Six months afterwards the head-aches returned and the scirrhus became a cancer. In July, 1761, M. Bieschaar had occasion to see this child. Repeated but useless attempts had been made to effect a cure. The tumor was movable, had ulcerated, and the salivary glands were much swollen.

Mons. B. reduced the inflammation by means of suitable general and topical remedies in four days, and thus was enabled to gain an accurate view of the tumor. Local applications he saw had little power, from their solubility in the saliva, and he therefore proceeded to the use of the knife, as the most prompt and sure means of success. With the aid of an assistant to keep open the mouth, he seized the tongue with a pair of flat pincers, the blades of which were wrapped with linen; he then examined accurately the depth and extent of the tumor, and by one deep semicircular incision with a bistoury removed it. The hemorrhage was stopped by an alum solution; lint alone was applied to the wound on the first day, after that a solution of agrimony, myrrh, &c., and an antiphlogistic gargle directed.

On the fifth day fever supervened and continued for twenty-three days, uncontrolled, except for the first few days, by the antifebrile treatment used, so that the operator began to give up all hope. The edges of the wound began to grow hard and dry, and the suppuration to assume a malignant character. At this stage Mons. B. had recourse to the hemlock pills of Stork, giving three morning and evening, and using for a gargle the simple decoction of hemlock. On the fourth day a change appeared for the better; on the eighth the patient could scarcely be recognized; on the 6th of September she was perfectly cured, and since then has felt no pain either in head, mouth or

throat, and her catamenia have been more full than during the whole course of her sickness.

Although the treatment of this case reflects great credit upon M. Bieschaar, we must be allowed to doubt, in the absence of any pathognomonic symptoms, if this were really a cancerous tumor. Originating, most probably, in dysmenorrhœa, we find the cure established only upon the restoration of this discharge; we therefore suppose the good effects of the hemlock to have arisen from its excellence as an emmenagogue, rather than from any supposed virtue as a cancer-cure. A due attention to the regulation of this periodic function would, we think, prevent many of those accidents and diseases to which females are subject.

CASE III, (Hildan.)—An old man, aged sixty-six, was afflicted, in November, 1613, with a small ulcer on the left side of the tongue, which, from a small vesicle, increased to a deep and foul ulcer. This ulcer had, by the use of the choicest remedies, been apparently healed; but there remained constant pain, especially lancinating pain in the left ear, and great difficulty in swallowing. Purgatives, injections, leeches, cauterants to the back of the neck, &c., were diligently used; the ulcer was bathed first in warm wine four times a day for a fortnight; then for as long a time with oil of vitriol; and throughout the whole an astringent cleansing gargle was used. None of these measures seemed productive of good; on the contrary, the ulcer seemed to become more obstinate and malignant, its ravages extending towards the frænum, but as yet not involving the larynx or esophagus.

A surgeon, passing through the country, was called, in the absence of the attending surgeon, and attributed the disease to a carious tooth, which he removed, and prescribed detergent and astringent gargles and Egyptian ointment. A physician of Lyons was then called in, but the treatment adopted seemed to have no control over the disease. The saliva was viscid, glutinous and abundant, and the edges of the first formed ulcer were callous, so as to cause insufferable pain in every attempt to curve the tongue.

This was the state of the case as reported to me by M. Robin, with whom and M. Pennin I resumed the treatment of the case as follows: After twice purging, we placed a seton in the back of the neck, and on the head a covering, composed of betony, sage, rosemary, lavender, peony, mace, cloves, cinnamon, styrax, red roses, with a few grains of kermes mineral:* again a purgative, and for fifteen days a drink of whey sweetened with syrup of violets, also wine, with a decoction of agrimony, veronica and aromatic essence of cinnamon; a gargle was constantly used of frogs' water, shell fish, plantain and roses; also a powder of pulverized frogs, prepared shell fish, and powdered stag's horn; lastly, a pledget was applied, saturated with a liniment made of ceruse, frog powder, shell fish and quince-seed mucilage. This treatment in a short time lessened the malignancy of the tumor, and in a month's time the patient was so far relieved as to be able to return to his business. I then left him in charge of MM. Robin and Pennin.

Unfortunately, he soon after fell into the hands of a quack, and on the third day after the taking of his medicines he had a violent and almost fatal hemorrhage from the ulcer. I was again called, and again, by means of the above gentle remedies, corrected the malignant action. But the vital powers were already too far spent, he was beyond the power of art to restore, and shortly died.

The quack had evidently, in this case from Hildan, given acrid and corrosive medicines, which had laid open some important blood-vessel. But much as we condemn the practice of this empiric, we cannot think him wholly chargeable with the death of the patient. However judicious we may deem the treatment of Hildan and the others, it certainly was only palliative, nor have we evidence of the complete healing of the tumor at any time since its first appearance; on the other hand, the symptoms strongly prove it a case of true cancer. I seek not to defend empiricism, but only to set forth the intractable character of this formidable disease.

* The ancients were very partial to prescriptions of unnecessary prolixity.

As I have elsewhere spoken at length on the subject of carcinoma, I shall content myself here with the report of a few cases of this disease when seated in the tongue.

CASE IV.—Not long since, an illustrious baron, says Paul de Sorbais, had a small tumor on the tongue, which gradually increased, assumed a carcinomatous character, and curved the tongue backward towards the gullet; convulsions soon came on, and the patient died.

CASE V.—Mons. B., over sixty years of age, consulted M. Missa, February, 1769, for the cure of an oval tumor, about the size of a pullet's egg, firm and hard, in color red, and carcinomatous in its nature, situated on the right side of the tongue, near its base. It had appeared suddenly, was firmly adherent to the tongue, and very painful. He could not swallow solid food at all, and liquids were taken with great difficulty, by inclining the head to the left side, as suggested by Missa. The patient was of a melancholic temperament, with a slight scrofulous taint, and the disease seemed to have arisen from a stubborn and neglected catarrh.

I began, says Missa, by two venesections, and a ptisan of dog-grass, thistle-root and pippins, sweetened with syrup of orgeat. For diet I prescribed cabbage, beets, turnips and unsalted butter. When, by the treatment which follows, the tumor was reduced, I added to the ptisan the roots of burdock and horse-radish, and allowed a more generous diet, adding carrots and white onions, with the yelk of an egg in his soup, morning and evening. Wines, meats and all stimulant food were prohibited. I directed the constant use of a gargle made from a decoction of marsh-mallows and white poppy heads, with syrup of orgeat; also the inhalation of vapor from an infusion of poppy heads. At other times in the day, he was directed to keep in the mouth, in contact with the tumor, a poultice of cabbage leaves, beets, wild poppy leaves, mixed with rye flour, ground rice or linseed meal—the same to be also applied externally. Every eighth day the patient was purged with senna, manna and cream tartar; an occasional enema was given, and four times he was bled in the foot. Warm baths were for a

while used with much relief, but from the coldness of the season, were substituted by pediluvia of two hours' duration, night and morning. This treatment, continued for three months, effected a complete although slow cure. I may mention, that during the course of my treatment, a quack, under gaurantee of speedier relief, administered a bramble leaf decoction, with camphor and spirit of vitriol. But the irritation and severe pain occasioned thereby, caused the patient soon to return to his first remedies.

Missa mentions having cured two other similar cases by the same course of medication. The latter, however was intemperate, and died of apoplexy four months afterwards. We ask the enlightened physician if this method be not preferable, in the treatment of cancerous, carcinomatous and other kindred diseases, to those more active and incendiary plans which we are from day to day forced to sanction.

CASE VI.—The wife of a goldsmith, aged sixty, of a phlegmatic temperament, had, on the left side of the tongue, a pustule, which gave great annoyance and pain. The remedies of the surgeon whom she consulted were unavailing; the pustule burst, took on the character of true carcinoma, increased daily, extending to the pharynx and the left tonsil, and finally proved fatal.

CASE VII.—A poor woman, whose condition in life prevented proper attention to her malady, had several pustules on the tongue, which gave place to excoriations, and these soon assumed a carcinomatous appearance. In this sad state she was seen by some kind persons, who sought advice for her; but her poverty prevented her from observing the necessary regimen, and the disease continued to progress. At the time when I first saw her, the tongue was completely pierced in six places, and was regarded by those whom I called to see so curious a case, as quite beyond the reach of the curative art. A few days afterwards a copious hemorrhage took place from the tongue, but I succeeded in arresting it; a second one, however, proved fatal.

I also saw, with M. Missa, a case in which the whole tongue

was carcinomatous, and which proved speedily fatal. Under such circumstances, the only hope of cure is in the extirpation of the entire organ—an operation difficult, hazardous, nay, we might almost say impossible. Even admitting the possibility of removing the local disease, the constitutional tendency still exists, to be again perhaps developed in some other part. Caustics and the cautery we cannot but regard as extremely hurtful in such cases; and fortunate may we consider ourselves, if we can only palliate the disease and give even a temporary calm.

§ 8.—*Fungus of the Tongue.*

Hildan, speaking of fungus, distinguishes between simple or benign fungus, and malignant fungus. Of the first class are those found around the cerebral membranes; the latter are found in the lower parts of the body. We shall call those forms of fungus simple, which spring from a benign humor; and those malignant, which have a cancerous character, accompanied with more or less induration.

CASE I, (Hildan.)—The illustrious Ruland sent me to see a young man, who had, in the spring, a small tumor on the end of his tongue, a little to the right side. It gradually acquired the size of a large chesnut, and remained so till the February ensuing, hard to the touch, and showing its thread-like roots extending into the substance of the tongue. During March and April it increased to the size of a goose egg, and obstinately resisted all medication. The right parotid was swollen, and the cervical glands much enlarged and of stony hardness. The tongue itself was greatly swollen, which, together with the size of the tumor, threatened suffocation.

I perseveringly opposed every suggestion for the extirpation or cauterizing of the tumor, because I could not but regard it as cancerous in its character, and its removal would still have left the roots of the disease in the substance of the tongue. I therefore adopted a palliative treatment, and with some success. About the 1st of May the tumor ulcerated, became softer, less

foul and offensive, and seemed almost to disappear: at the same time the lips became hard, swollen and everted, presenting a truly horrid appearance. The ulcer for some time discharged a dark, bloody and fetid matter, but at last took on a more healthy character, and seemed about to cicatrize.

At this stage, however, the cervical glands became still larger, and decidedly carcinomatous. They formed an open cancer, which reached to the tongue, eroded its frænum, caused a new ulcer to appear on the extremity of the tongue, and displayed an inveterate obstinacy. This organ became so greatly swollen as to fill the whole cavity of the mouth. The uvula also became involved in the disease, and the pressure of the teeth against the swollen tongue caused its ulceration, presenting a most deplorable spectacle. Acute lancinating pains were felt in the hypochondriac regions, sometimes the right, sometimes the left, and again in both—a pain amounting at times to an almost insupportable agony. The breast was tumid, and covered with tubercles and swollen veins. Severe pain would also shoot through the shoulder, under the clavicle, and through the arm and leg of the right side: I have seen the limbs quivering under the influence of this pain. This patient sank under his great sufferings, and died on the third of June, but not, as was anticipated, by suffocation.

§ 9.—*Ulcers of the Tongue.*

The general remarks elsewhere made on the origin and nature of ulcers, will apply here. To the subject of apthæ we have given a separate chapter. Ulcers of the tongue, apart from the annoyance they occasion, deserve special attention from the possibility of their assuming a very obstinate character, in consequence either of the irritation caused by talking, eating, &c., or of ill advised treatment. The teeth also, which, as Ruysch observes, are, when sound, a natural protection to the tongue, may, when carious, become the cause of perhaps fatal disease in that organ. He recommends, in such cases, the immediate extraction of the offending teeth, and application of some

stimulant to the ulcer. If this be insufficient, he further directs the excision of the indurated edges of the ulcer, and use of the cauterant—a plan which he much prefers to the use of escharotics. In ulcers of internal origin, he advises a similar procedure, combined with suitable measures for the eradication of the constitutional taint. The following case is given by him in illustration of his principles.

CASE II, (Ruysch.)—A woman, advanced in years, had for a long time been troubled with an indurated ulcer of the tongue, on which incisions had been practiced at two different times, but without success. The consulting surgeon and I, decided upon the necessity of complete excision with the knife, followed by deep, and if necessary repeated cauterization. After administering general preparatory remedies, we proceeded to the operation. The tongue was drawn out by means of a linen band, as far as possible, and the disease was then cut away with a sharp pointed curved bistoury: then, after placing wet linen in the mouth, with a view to protect the surrounding parts, the cautery was firmly applied, and twice or thrice repeated. This was followed by emollient gargles, and after the separation of the eschar, by tincture of myrrh and aloes, with a desiccant decoction of celandine. Up to the present time there has been no return of the disease.

CASE II, (Malaval.)—In this case an ulcer of the tongue, for which the patient had submitted to a great variety of remedies, and been condemned also to mercurial frictions, was cured by the simple extraction of a carious tooth, the sharp broken edge of which was the irritating cause of the ulcer. How often, in similar cases, has a precipitate and hurtful treatment been adopted upon suspicion of venereal, scrofulous or other taint.

CASE III.—Many years ago, a woman from the abbey of Pont-au-Dames, in Brie, came to Paris, for the cure of an ulcer, which had gradually spread over the whole of the left side of the tongue. She was about fifty years old, and of phlegmatic temperament. Her delicate health, together with the state of her gums, gave suspicion of a scorbutic diathesis, but the

treatment based upon this supposition had proved abortive. M. Morand at first suspected a carcinomatous taint; but when, upon closer examination, he found a number of carious teeth on that side of the mouth, with sharp ragged edges presenting towards the tongue, he at once sent the patient to me. Their extraction was followed by a complete cure. This ulceration may occur, from the same cause, on both sides of the tongue, as in—

CASE IV.—An old man, who had been for fifteen days tormented with very painful excoriations on both sides of his tongue, sought relief at my hands. I found them to arise from the irritating presence of a number of ragged stumps on either side of the mouth. Some of these I extracted, and others, in consideration of their number and his age, I filed smooth. I then touched the excoriated surfaces with plantain water and Lanfranc's collyrium, and ordered a gargle of a sweetened barley decoction and vulnerary water. On the eleventh day the cure was completed. Children as well as adults are liable to the same affection as in the following :

CASE V.—A child was brought to me, who had, for more than six weeks, suffered severe pain from ulcerations on either side of the tongue, and an ulcer on the inside of the left cheek. The breath was exceedingly offensive, and the child spit out much bloody and purulent matter, but the mouth was so swollen that it could scarcely be opened so as to gain a view of the inside. Caries of the jaw seemed to be indicated by the symptoms; but I learned that the patient had been much troubled with bad teeth, which led me to examine, as carefully as possible, with my finger and a probe. In this way I detected the presence, on both sides of the lower jaw, of several decayed fangs, with sharp and prominent roughnesses; these, doubtless, had given rise to the ulcerations both of tongue and cheek, for on removing them—which, from their slight hold, was easily done with a small elevator—a cure was soon effected by means of an emollient gargle and poultice, together with a gargle of plantain infusion, sweetened with oxymel.

These cases show the importance of discerning between ulcers simply local in their origin, and such as have a deeper

seated cause: the remedies suitable in the one case may be very inapplicable to the other. The following case will show how a simple ulcer may become aggravated by an injudicious use of corrosive agents.

CASE VI.—An individual, while eating fish, had his tongue pierced near its point by a bone. It was at once withdrawn, but the wound continued to bleed throughout the day. The tongue swelled greatly, and became exceedingly painful, so much so as to prevent the patient from sleeping. At last a tubercle appeared about as large as a hemp seed, and formed an ulcer with everted edges. It had been treated with lunar caustic and stimulant gargles, which had served greatly to aggravate it. It was then thought that there might be some venereal taint; but as soon as I saw the case, I judged differently, and was persuaded that the whole difficulty arose from the want of free discharge for an accumulated fluid within, the result of the wounding of certain deep-seated delicate vessels. I dilated the ulcerated opening with a bistoury, and followed it immediately with the hot iron. I directed a gargle of mallows; in eight days the eschar separated, and in a very short time after, the tongue was restored to its natural condition.

CHAPTER ELEVENTH.

APTHÆ.

The term apthæ, (from the Greek *απτω*, to *kindle*, also to *bind*,) is used alike by ancients and moderns, but in quite a different acceptation. The former define apthæ as superficial malignant ulcers, attended with heat, occurring especially in infants, and not confined to the mucous membrane of the mouth. It is at the present day universally applied to those whitish pustules which appear on the mucous membrane of the mouth, and sometimes of the adjoining parts. Inattention to this difference has led many to apply to the latter disease a treatment based upon the definition of the ancients, whereas the two are palpably different.

Apthæ have been regarded as ulcers; but ulceration implies solution of continuity, whereas in true apthæ there is no erosion or decrease of substance, but, on the contrary, an increase; desquamation of the apthous crust leaves no trace of cicatrization. Theorists speak of white, red and black apthæ, according to the nature of the generating humor; but during a long practice I have never seen them of any other color than white, whitish, or, especially when of an unfavorable character, ash-colored.

They commence by small white spots, usually on the uvula, thence spreading, sometimes over the veil of the palate, sometimes over the tongue, gums and inside of the lips and cheek. Often they spread still farther into the pharynx and esophagus. Of their extension beyond this we cannot, of course, have the evidence of sight, but we have other and unequivocal symptoms, which prevent us from regarding as an absurdity the idea of their presence in the esophagus, stomach and smaller intes-

tines; as, for instance, in the difficulty of breathing and deglutition; also in the appearance of the discharges from the stomach and bowels, so frequent in apthous disease.

The description of apthæ is easier than their etiology. We maintain that they depend in all cases upon the same cause, differing indeed in degree of intensity, but never in its nature. We therefore differ from those who assign one cause in adults, and another in infants. Nor can we agree with the many who make them to arise from excess of serum or of acid in the milk or nourishment given to the infant. The depleting, purging and starving treatment based upon this hypothesis, is most pernicious; moreover, experience tells us that this very acidity or astringency of aliment will frequently cure apthous eruptions, or prevent them from coming to maturity; and a serous flux, determining to the mouth, has caused the complete disappearance of existing apthæ.

What then is the true origin of this disease? We believe it to be found in the existence of a slow and imperfect *crisis*, and to arise from a sulphurous humor generated in the larger vessels, and determining to such parts as are, by position or structure, most impressible. Observe for a moment the circumstances and character of apthæ. In all fevers, in the young and in the vigorous, their appearance is ever preceded by a crisis more or less distinct, and, according to the violence of the primary disease, marked by more or less severe symptoms. In one case nature struggles successfully with the acrimonious morbid principle, a favorable crisis occurs, and an apthous eruption brings great relief to the patient: in another case this morbid principle is too abundant, obstinate or malignant—no crisis occurs—no apthæ—nature succumbs, and the patient dies. Again, we have apthæ through the critical transfer of morbid action from some more or less vital and important organ. In some cases the change proves salutary: in others there is a reaction, the apthæ disappear, and if the *vis vitæ* be not destroyed, it is often greatly endangered.

Apthæ rarely occur in a perfect and favorable crisis, but rather, as we have before said, in those which are slow and

imperfect, such as are met with in a great number of diseases. Thus we find some apthous eruptions of not only days', but weeks' and months' continuance. When, for instance, necessary evacuations have been neglected in the onset of disease, and a cachectic plethora has supervened, the cure is slow and incomplete without the occurrence of apthæ. Diuretics and gentle enemas aid the recovery; blood-letting and purgatives retard it: the apthæ disappear after fulfilling their sanative purpose, and the patient feels perfectly relieved. Experience, however, shows that the danger is not quite over; some lurking matter may take fresh increase, give rise to new apthæ, in default of other means of escape from the system, and greatly endanger life; this may happen twice, thrice, or oftener.

The causes or antecedent symptoms of apthæ may be mild, and recovery take place without any or with very simple treatment; or they may be severe and lamentable, ending in suffocation, delirium, or obstinate diarrhea. This difference we find explained by the varying state of the humors; at one time being crude, and by consequence irritating; at another time matured or concocted, by which process of concoction the more hurtful principles are expelled—a process aided, in some inexplicable manner, by the continued circulation of the animal spirits. Thus it happens that the apthæ of seventh day crises are usually more unfavorable than those which follow crises of a later date, when the morbid matter has had time to undergo a thorough concoction.

Although apthæ are most generally preceded by febrile miasmata, they are not necessarily so. I have seen cases, both among adults and infants, in which they have been neither preceded or attended by fever. In infants we may properly suspect impurity of the mother's blood.

Certain evacuants have been found more hurtful than beneficial in the treatment of apthæ. This comes from a forgetfulness of the excellent advice of Hippocrates, who tells us to have regard, in the choice of depleting agents, to the channels of evacuation which nature points out in any given case. Now the vessels concerned in the critical discharge of an apthous

eruption, are the lymphatic rather than the venous or arterial vessels. Therefore, to the changes of the lymphatic fluid, rather than to those of the blood, is our attention to be mainly directed in the management of this disease. We have frequent evidence of serous or lymphatic engorgement at the outset of apthous eruptions; in the fever, stupor and restlessness during sleep—indicating a fulness of the head, and an acrimony of the humors.

Apthæ are more common in some countries than in others, which explains the almost total silence of some writers respecting them. This depends upon difference in climate and mode of living. In warm countries their course is rapid, from the increased perspiratory action of the skin. But in colder latitudes, where the food is coarser, the habit of body denser, and the humors thicker, their progress is slower, because the secretions of the system generally are more liable to obstruction. In these countries, especially, all discharges which tend to arrest perspiration, such as hemorrhoidal, intestinal or uterine, whether occurring spontaneously or artificially provoked, are very unfavorable in the treatment of apthæ. On the contrary, a copious cutaneous or urinary secretion forms often a favorable crisis. This agrees with the doctrine that apthæ are essentially serous, and most readily cured by a free discharge of serum or lymph. The cause of endemics we leave others to explain; each country bears in its womb the seeds of its own diseases, and also the means for their cure. External agencies may cause apthæ, not, as the ancients supposed, by their direct action on the mouth, but indirectly, through the mass of the circulating fluids.

The diagnosis of apthæ is easy; not so the correct interpretation of their premonitory symptoms. Painful deglutition, dryness of the mouth, a thick husky voice, heat of the stomach, with rumbling noises, disturbed, unrefreshing sleep—these often precede apthous eruptions. Urinary symptoms are not to be relied upon, though often useful in prognosis after the appearance of the eruption. In the different forms of fever, the obstinacy of the disease is often a precursory symptom; when, notwithstanding the intestinal, urinary and other evacuations,

there still exists great depression and embarrassment of the vital functions, the appearance of apthæ will often in a single night bring calm and relief to the patient, as experience has abundantly testified. The physician should follow nature's hint, and seek to aid in the cure of the disease through the same channels. The above symptoms, be it understood, are by no means necessarily followed by apthous eruption.

We should be careful in our prognosis: where the system is not weakened, the pre-existing morbid matter well concocted, or the extent of the eruption limited to the palate, we may anticipate a favorable issue. But if the patient be in a reduced and weakened condition, the morbid matter crude, or the apthæ covering the entire membrane of the mouth and pharynx, the disease is much more to be feared. Again, suppression or derangement of the menstrual flux is unfavorable, from its tendency to draw the eruption from the place where alone it can properly mature. Profuse alvine or hemorrhoidal discharges are also hurtful; also any catarrhal attack falling upon the throat, causing the sudden disappearance of the apthæ. Apthæ occurring in diseases, at the onset of which there was insufficient evacuation, are grave and dangerous. The disease may occur in persons of either sex, and be of tedious duration, but when the appetite returns, not only is the food highly relished, but it gives, by its new nourishment, relief and salutary benefit.

We come now to the treatment. First, by mild laxative gargles, we must seek to mature the apthæ; then we should lessen, and if possible remove, the febrile action of the vessels, which the critical apthous eruption rarely altogether relieves. Blood-letting I have spoken of as injurious before the appearance of the apthæ; it is equally so after they have appeared, tending to weaken the recuperative powers of nature, and not unfrequently leading to a fatal issue. Some coexisting disease, such as pleurisy, or threatened apoplexy, may, however, render the necessity for bleeding imperative. I once had a case of apthæ complicated with burning fever, and all the other symptoms of pleurisy. Venesection in this case was not followed by relief, nor was the disease subdued till after the administra-

tion of sudorifics, which caused the discharge of a number of very dark fetid stools. The debility which followed was soon overcome by the patient's strength of constitution and suitable tonics. In another case of apthæ, where delirium and other grave symptoms appeared, I resorted to blood-letting, and by this means saved the patient's life. There are cases also where, previously to the apthous eruption, venesection is not only allowable but is demanded.

Again, drastic purgatives are carefully to be avoided, for they sometimes induce an obstinate hypercatharsis. On the other hand, general evacuants, which excite the alvine, urinary and cutaneous secretions, are productive of great relief, rendering the apthæ mild and harmless. Enema especially, and suppositories, are thus beneficial, if used cautiously about the third or fourth day after the eruption. When the bowels are rather sluggish, cathartics given by the mouth will, it is true, often cause the prompt disappearance of the apthæ; but this will sometimes be followed by uncontrollable purging, with all its untoward and even fatal symptoms. The only alternative, in such cases, is to seek to bring back the apthous eruption. In fine, our own daily experience teaches us that we cannot use too great caution in the employment of venesection and purgatives in this disease.

Apthæ, as we have said, may occur either before the seventh day of disease, or they may arise after that crisis, when the morbid influence is subdued, and the humors well concocted. In the latter case, the eruption, in itself salutary, demands only palliative and soothing, not astringent or discutient remedies. Apthæ as defined by the ancients, corroding ulcers, doubtless demand such active treatment; but apthæ, as defined by the present universal acceptation, are only aggravated by such officious and ill-judged interference. If we may be allowed the figure, the enemy, already at the gate, is again driven back into the system, to work anew his mischief. The gargles and washes used should therefore tend to excite rather than dissipate the eruption. Syrups we would not recommend, because they tend to excite nausea and disgust, especially as we have

much better remedies in the preparations of jujube, colt's-foot, capillaire, &c. The warmth of these mixtures should be at first moderate, and gradually increased towards the close of the disease.

When apthæ occur during a slow and imperfect crisis of some fever, care must be had that the already existing febrile excitement be not increased and rendered more violent by our treatment. A judicious regimen, tonic and soothing, and somewhat diuretic and sudorific, is in such cases often preferable to medical formulæ. Acids, otherwise beneficial, may prove injurious, by exciting pulmonary irritation and cough. In the graver forms of the disease, other measures become necessary, as febrifuge and anodyne emulsions, &c. If these have a constipating effect, clysters or suppositories should be used, taking care that we do not, by our purgative remedies, excite an unmanageable diarrhea. Some forms of apthæ, especially in adults and in severe fevers, have a malignant tendency. The best course, here, is to sustain the vital forces, and this is usually much more effectually done by a proper regimen, than by any system of medication.

For further remarks on the subject of apthæ, I would refer the reader to a very interesting and luminous dissertation, "Medical Commentary on Aphthous Diseases," by Vincent Ketelaer, published at Geneva, 1727. This author speaks of the difference between the ancient and the modern acceptance of the term apthæ, and the consequent impossibility of making any practical application of the teachings of the ancients on this subject. I shall now proceed to illustrate the above remarks by the report of a few cases.

CASE I, (Diemerbroek.)—An infant two years old was, in consequence of the failure of its mother's milk, given over to a nurse of bilious temperament and healthy. On the eighth day there commenced frequent vomiting, restless sleep, frequent greenish-yellow stools, and whitish apthæ over the whole of the mouth, which were so painful as to prevent the child from taking the breast. Diemerbroek attributed these symptoms to the too serous, heating and acrid nature of the nurse's milk,

and accordingly directed his treatment to the nurse rather than to the child. The symptoms, however, evidently pointed to the presence of a morbid principle in the child, which nature sought to expel by the apthous eruption. We should therefore have preferred to treat this case, as recommended by Ketelaer, with mild, laxative gargles, calculated to mature the apthæ. Diemerbroek is evidently misled by the ancients, who regard apthæ as ulcers.

CASE II, (P. La-Forêt.)—During an apthous epidemic at Anvers, which proved fatal to many children, some female made trial of small live frogs, which she applied to the apthæ, repeating them once, twice, or, if necessary, oftener. She thus saved the lives of her own and of many other children. The frogs are supposed to suck the malignant virus from the ulcers. Ludovic mentions a case cured by this means, and adds that the frog died as soon as it was thrown on the ground.

La-Forêt reports the case of a young man, of bilious temperament, subject to yellowish and inflamed apthæ. He was cured by an infusion of rhubarb, and a gargle of some cooling decoction. The color mentioned is common when the apthous crusts are about to desquamate. That this treatment produced no injurious metastatic action upon vital parts, may, we think, be attributed to the patient's vigor of constitution. Ketelaer regards apthæ as a critical and salutary effort of nature, and therefore seeks to encourage rather than to dissipate them; while, at the same time, he aims to check all undue heat or febrile action. If the apthæ have been preceded by any suppressed or delayed evacuation, this point also calls for special attention. The ill-advised suppression of apthous eruptions may engender symptoms at once grave and dangerous.

CASE III, (Riviere.)—My son, aged four years, had a violent attack, attended by innumerable whitish painful apthæ of the mouth and throat. He could neither eat or sleep, and became extremely emaciated. I gave rose honey with spirit of vitriol, and applied blisters, but all to no effect, and diarrhea was added to the other symptoms. At last I gave a grain of opium in a drink, which relieved the pain, and procured a

regular, quiet and refreshing sleep. The flow of the humors was arrested, and on the next day I gave a purgative with decided benefit.

Riviere evidently follows the ancients in treating apthæ as ulcers. The ill effect of such treatment is apparent in the non-relief of the symptoms, and supervention of diarrhea. The laudanum was very proper, and the revellant use of the blisters to prevent the extension of disease to the esophagus. The purging with which the treatment closes is considered, by Ketelaer, admissible, after the eruption has ceased and the crisis passed.

CASE IV, (Bekers.)—A lively infant, four years old, was tormented night and day with apthæ of the mouth, which hindered it from eating, drinking or sleeping. Fever, pain, sleeplessness and want of nourishment reduced it to the verge of the grave. Some silly women had made use of gargles, but to little purpose. I first gave a laxative syrup, the basis of which was manna, repeated it often, and then sought, by alteratives, to reach the cause and active source of the eruption. I thus saved the life of the child.

Bekers, though evidently imbued with the doctrine of the ancients, did not treat the eruption as a dangerous ulcer. He seems to have regarded it not so much a disease as a symptom, and perhaps a salutary one, directing his treatment to the internal derangement, instead of officiously interfering with the local affection. The purgative given in this case did not prove hurtful, yet Ketelaer thinks, in the great majority of cases, that clysters or suppositories are the safer remedies. If the gargles used by the women spoken of, were of an emollient, soothing character, the contemptuous epithet of Bekers is undeserved.

CASE V.—[A fatal case, from Manget, of eroding chancrous ulceration of the mouth, similar to the pestilent apthæ of Naples, as described by Severinus. M. Jourdain thinks the title of apthæ, given by Manget to this case, altogether at variance with the modern acceptation of that term.]

CASE VI, (Riviere.)—A lady, afflicted with an apthous

eruption of the mouth, was bled, purged, dosed with cooling juleps, and rubbed with spirit of sulphur—but all to no purpose. She found no relief for her suffering until I administered opium, three grains daily for three days; under this treatment the eruption soon disappeared.

The persistence of the eruption, lamented by Riviere, would by Ketelaer have been regarded as most fortunate, since he considers it a salutary operation of nature, the premature arrest of which is likely to be followed by serious and perhaps dangerous symptoms. This case is but another instance of the impropriety of treating the apthæ of the moderns as if identical with the apthæ of the ancients. The eruption may, it is true, be dissipated, but the effect, by repercussion, upon internal and vital organs, is frequently disastrous. In this, as in Case 3, we see the excellent effect of opium, no symptom indicating the necessity of any other remedy. It should, however, according to M. Lorry, be used with much caution.

CASE VII, (Diemerbroek.)—A woman, aged thirty, was attacked with a continued fever. There was great anxiety of expression, febrile action moderate, stools scant and irregular, urine natural, and in the short space of two days extreme depression of the vital energies. On the fourth day there was some difficulty in swallowing, and at the same time innumerable whitish apthæ appeared over the whole mucous membrane of the mouth and throat. There was little pain, the chief annoyance arising from the great prostration. Diemerbroek was consulted, and gave as his opinion, that “the apthæ were the result, not the cause of the fever, indicating by their presence that it was of a malignant and dangerous type. Suitable gargles, soothing and maturative, rather than acrid, astringent or revellant, might be applied locally, but the eruption could only be cured by remedies directed to the removal of the fever. The number and color of the apthæ were not such unfavorable symptoms as the excessive prostration, and to this chief attention was to be directed. A tonic and sustaining regimen would best fulfil this indication. On the return of strength, the apthæ would disappear; meanwhile they would demand some topical remedies, but not with a view to their removal.”

CASE VIII, (Treubler.)—[An eruption of the mouth, mis-named by Treubler apthæ, occurring during a violent small-pox epidemic, and in variolous patients—by consequence neither more nor less, as Jourdain observes, than variolous pustules of the mucous membrane.]

CASE IX.—[Taken by Jourdain from Ludovic, apparently with the sole view of reiterating the caution against confounding apthæ as so called by the ancients, with the modern disease known by the same name. The case was cured by remedies suited to true ulcers—remedies which, according to Ketelaer, are inadmissible in apthæ proper. The formation of crusts upon the apthous spots may perhaps mislead in diagnosis; but a further and closer examination will show that there is beneath them no solution of continuity, as in ulcers.*]

Ludovic reports many cases of children cured by the local use of the oil of radish sweetened with sugar. But nature herself, when the constitutional cause of apthæ is subdued, will often work a cure unaided by any such means. Treubler also, as well as Ludovic and La-Forêt, speaks of the cure by live frogs, and says that it is a common remedy among the midwives of Holland.

*The other remarks of Mons. J. upon the case, are an exact repetition of what has gone before, and we therefore omit them.—*Tr.*

CHAPTER TWELFTH.

RANULA.

RANULA, though sometimes secondarily involving the tongue, is not properly a tumor of that organ, and demands, therefore, a separate consideration.

Ranula, (or *grenouillette*,) so called from the peculiar croaking, frog-like voice of the patient, is a soft, indolent tumor, under the tongue, containing a fluid resembling white of egg or honey, and is often as large as a pigeon's egg. It is sometimes very hard, and, according to the late Mons. J. L. Petit, contains occasionally pus; in the latter case it is more properly abscess than ranula. The disease is caused by an obstruction and retention of saliva in the sublingual ducts and glands.

By some writers a free incision into the tumor, followed by detergent injections, is considered sufficient for the cure of ranula. Others maintain the necessity of keeping a fistulous opening for the escape of the saliva; others, again, prefer the cautery to the knife in the treatment of this disease. If the tumor be soft and loose, the knife is preferable; if hard and scirrhus, or if covered with fungus, the actual cautery is best; as to the propriety of leaving a fistulous opening, experience alone can in any particular case decide.

CASE I, (J. L. Petit.)—I saw under the tongue of a certain person, a small, transparent, painless tumor, which, in about two months, became as large as a cherry. I twice lanced it, but it returned. I then proceeded with more care, cut out the whole sack, and removed overlapping portions of mucous membrane. There was no recurrence of the disease. With due deference to the skill of this distinguished surgeon, we would suggest that his difficulty arose from not closely observing the

bottom of the tumor, and from the premature closure of its lips after incision. Suitable injections might perhaps have obviated the necessity for the last operation.

CASE II.—An individual, experiencing singular difficulty in eating, drinking and speaking, consulted me, after fruitless trials of gargles, &c. I found under the tongue a true ranula, about the size of a large filbert. I lanced it and discharged a spoonful of glairy matter; then used injections and gargles of salt of lead, agrimony, &c. For eight days the discharge continued of the same glairy character. I then added to the former remedies injections of wine and water. In a short time the wound cicatrized. Three years have elapsed without any recurrence of the disease.

The following three cases are from the *Dictionnaire Raisonné d'Anatomie*, and are worthy of perusal.

CASE III.—In May, 1761, an infant twenty-two months old was brought to the Hotel Dieu of Lyons, with a very large ranula, rendering any motion of the parts very painful. Simple incision of the tumor, discharging a quantity of sero-purulent fluid, effected a cure without the necessity of any after treatment.

CASE IV.—Etienne Ray, aged twenty-two, came to the Hospital in 1761, with a tumor under the tongue, as large as a turkey's egg, presenting upwards to the level of the teeth, and below impeding the action of the larynx. After much useless local and general treatment, Mons. Bert perceived fluctuation, and Mons. Puy pronounced it to be ranula. He lanced it and gave vent to half a pound of encephaloid matter. This was followed by injections of camphor, and the introduction of lint dipped in the same. Sweetened wine was used as a gargle; and when, on the fourth day, keen pain was felt, with an offensive discharge from the wound, injections of vinegar and water were substituted. A cicatrix soon formed, and the patient was discharged.

CASE V.—George Poirieu, aged twenty-six, came to the Hospital with a ranula smaller than the preceding, but still the source of much annoyance. It was opened, and much matter of a melicerous nature escaped. The patient was cured in about seven days, under the use of gargles and general remedies.

These cases go to prove the advantage of the treatment adopted, and show how unnecessary the more painful practice of Petit. They lead us also to infer that, in the majority of cases, the use of medicated pledgets laid in the wound may supersede the formation of a permanent fistula.

CASE VI, (Tulpius.)—A young man had a ranula which caused extreme inconvenience in speaking, swallowing and breathing. When opened to give issue to the matter, its contents were found hardened. It was then destroyed by the actual cautery.

J. L. Petit gives the case of a ranula as large as an apricot, which was very firm to the touch. A large incision was made, but the contents of the sac did not escape until forced out by pressure; they then came out in a solid mass, retaining for a long time its original shape.

Rosius says that the cure of these tumors is retarded in two ways. First, by the small size of the incision, which properly should be carried the whole length of the tumor; secondly, by the neglect to destroy the sack which secretes the morbid fluid; this is best done by medicated pledgets of lint, and the use of astringents, &c., to subdue inflammation.

Claudinus tells of a young girl, eleven years old, who had a large tumor or excrescence under the tongue, which caused her to stammer in talking. The tumor increased in the morning and decreased in the evening, and was uniformly of a livid color. Its true character it was difficult to determine. The consulting surgeon advised the complete extirpation of this tumor by knife and cautery; this to be followed by depletion and revellants, such as blisters and cups to the back and behind the ears; also an issue to be established in the arm.

Diemerbroek gives the case of a woman, aged thirty-six, with a large ranula, which filled the whole mouth and projected beyond the teeth. It increased and at length burst, causing the death of the patient from suffocation by the discharged matter. The case should teach us the importance of not neglecting these tumors.

CHAPTER THIRTEENTH.

DISEASES OF THE FRÆNUM.

§ 1.—*Section of the Frænum.*

SCARCELY any operation in surgery is so often and unhesitatingly performed by the unprofessional as this. Every midwife seems to consider it her duty to give freedom of motion to the tongue, by cutting, or, more properly, lacerating, its fillet with the finger-nail—a procedure, in the majority of cases wholly unnecessary, and in some productive of injurious irritation and inflammation. Cupidity is doubtless a frequent incentive with these women, who are in the habit of demanding compensation for an operation so necessary and beneficial to their young charge. The imposition should be exposed, for, according to Fabricius, scarce one in ten thousand infants demand the operation. If the infant, when given to the nurse, is able to take the breast, any subsequent refusal must be owing to other causes than tongue-tie, such as repugnance to the nurse, or the bad quality of her milk, or illness on the part of the child itself. The section of the fillet is attended sometimes with a very troublesome and even fatal hemorrhage, as we shall see from the following cases:

CASE I, (Hildan.)—In May, 1608, a peasant brought his child, aged eleven, to me, requesting me to cut the tie, which he asserted would correct the child's imperfect speech. The tongue was very thick, but as I saw no tendinous ligament restraining its free motion, I refused to operate. A month afterwards some imposter, asserting the necessity of an operation, cut the attachments of the tongue on either side, as well as in front: but note the consequence! Convulsive spasms of the

muscles of the legs and arms immediately took place, constant pain and gradual but extreme emaciation and debility. In July following the appetite had returned, the pain disappeared, but the limbs ever remained contracted, admitting only of spasmodic movements.

Forestus gives a somewhat analogous illustration of this curious nervous sympathy, in the case of a young man, who was rendered instantly dumb, from wounding his hand while at dinner with a sharp bone. His speech was, however, restored by the aid of art.

One of Hildan's brothers could not speak a word at the age of four years. Power of articulation was given by cutting the frænum of the tongue, which in this case was tendinous, and greatly confined the movements of that organ. Hildan advises to cut in two or even three places, to prevent the chance of reunion, and cautions the operator to cut only that portion which has a semi-transparent, aponeurotic appearance. The operation may be done either with scissors or with the point of a curved bistoury. If necessary it should be repeated, as Hildan was obliged to do in the case of his brother. If hemorrhage be feared, Parè advises the use of the ligature, by the gradual tightening of which the restricting portion of the fillet may be effectually and safely severed.

Where the frænum is too large, Dionis does not hesitate to cut it in the manner practiced by Hildan, avoiding carefully the ranine artery. [For this purpose the point of the scissors should be directed downwards, and have their points round instead of sharp.]

This operation is sometimes performed on mutes; but dumbness arises usually from other and more irremediable causes. Stammering or impediment of speech is occasionally the effect of a tongue-tie, and in such case the simple operation will be attended with benefit, as in the following—

CASE II, (Helvigijs.)—A young girl of Ratisbonne, fair and healthy, had from infancy suffered an impediment of speech, so that she could articulate only a few words. The tongue was found, on examination, to be tied down by its frænum, after the

division of which, with a pair of scissors, she gradually gained the power to utter any word without hesitation. Laceration with the nail, as often practiced, may be followed by grave consequences, as will be seen from

CASE IV,* (Sculdet,.)—In 1628, a new-born infant had the fillet of its tongue torn with the nail, avowedly that it might one day talk the more fluently. Pain, inflammation and inability to take the breast followed. The parents, thinking this inability to arise from an insufficient section of the fillet, sent for a surgeon, who was so imprudent as to cut it still more. Hemorrhage followed, which in three days proved fatal. The loss of the infant brought on disease of the breast in the mother, which subsequently became cancerous and led to a very painful death.

Where the child cannot nurse or put its tongue beyond the lips, this operation becomes necessary, but is not under other circumstances, as Nuck justly remarks, demanded. It is by far too often and too rashly done. The hemorrhage which sometimes results is the more insidious, from the fact that infants always swallow the blood, and death may take place before we even suspect the cause. On the discovery of hemorrhage, we should resort to the strongest styptics, or even to the actual cautery itself.

§ 2.—*Excrescence, Scirrhus and Fistula of the Frænum.*

CASE I.—In 1768, I had occasion to see an infant, eleven months old, who for a month past, whenever it took the breast, uttered piercing cries. It slept but little, and became much emaciated. Difficult dentition was assigned as the cause of the symptoms. I could discover no evidence of this, but on looking under the tongue I found, in the centre of the frænum, a fungus about as large as a vetch seed. As to the treatment proper to this case, the ligature seemed impracticable, the

* CASE III is an obscure and unimportant one, from Sculdet, in which some possible connection is intimated between this simple operation and a curvature of the spine.—*Tr.*

knife inadmissible from the danger of hemorrhage, so unmanageable in infants; escharotics equally improper; the actual cautery was, therefore, the only expedient. This I applied with great care, securing the services of a competent assistant, and guarding the parts around from all chance of injury. Immediately after I ordered the child to be nursed, and daily use to be made of vulnerary water and honey. On the fifth day the eschar separated, and the infant experienced no further annoyance.

CASE II.—In 1759, I was called to see, at Colombe, near Paris, an infant five months old, that of late had been unable to nurse, although heretofore it had readily done so. I found the difficulty to arise from a small scirrhus tumor, as large as a hemp seed situated in the frænum. I made a small incision, and pressed out the contents of this tumor, which were hard, chalky and yellowish. Instant relief was given, and in a few days the infant was restored to full health.

CASE III.—In April, 1764, a female showed to me a reddish spot on the frænum of her tongue, with indurated edges. It seems that an excoriation and ulcer had appeared, which she treated with vitriol: a cicatrix formed, then an excrescence appeared, which she destroyed by caustic; but the swelling and hardness persisted. I of course pronounced the cure imperfect, and ordered suitable gargles. The excrescence reappeared; I removed it, but in eight days it again appeared. A second time I removed it; then introducing a stylet into the wound, I passed it down nearly to the larynx. Into this fistulous canal I introduced a tent dipped in butter of antimony, enlarged the opening by a lozenge of red lead, and kept it open with a pledget of dry lint. In twenty-four hours I removed these dressings, and laid a tent charged with styrax the whole length of the fistulous canal. In fifteen days I brought about a complete cure. Dilatation by knife, or cauterization with the hot iron, were, from the peculiar position of this fistula, wholly inadmissible.

CHAPTER FOURTEENTH.

CALCULI AND WORMS FOUND UNDER THE TONGUE.

Most authors, ancient and modern, have given instances of calculi found in different parts of the body. They are met with in the tongue and its frænum, the oftener, perhaps, from the spongy nature of these parts. Obstruction in the vessels or glands of this part may cause tumors of varying consistence, atheromatous, melicerous, calcareous or gravelly, and sometimes the generation of worms. Of the former I have already spoken; I shall now give a few cases illustrative of the latter.

CASE I, (Manget.)—My preceptor, the celebrated Charles Drelincourt, showed me five out of seven calculi which he once removed with his finger-nails from under the tongue of a patient, where they had caused an enormous and stubborn tumor. This tumor was under the tongue, a little to the right, and evidently resulted from the obstruction of the sublingual salivary duct, by the above mentioned calculi. The first was the largest of the seven, and its escape gave free vent to the others. Their presence had caused considerable dilatation of the salivary duct.

CASE II, (Manget.)—A country merchant, plethoric and very fat, subject to attacks which threatened death by suffocation, was, in 1680, seized with great swelling of the salivary glands of the right side. We perceived that pus escaped from the right sublingual duct, and that its orifice was sufficiently open to admit a probe, and even a delicate syringe. Farther examination discovered a calcareous obstruction in the duct, which we removed by means of a suitable instrument, and found to be about as large as a filbert. The operation, though a painful one, was followed by great relief, and gradually the

parts returned to their original integrity. The patient died in 1695, from plethora and intemperate living.

CASE III, (Ledilius.)—A lady of Grumbert had complained for the last ten years of pain under the tongue, occurring every spring and fall. During this time she had suffered several miscarriages. Soothing remedies were at first successful; then anodynes were necessary from the severity of the pain; lastly, as the tongue was swollen, I applied emollients, during the use of which a calculus about the size of a filbert was discharged: from this moment recovery was rapid.

Many writers, Forêt, Lusitanus, Schultzius, Staltender, &c., speak of the occurrence of the calculi in the substance of the tongue, and of the prompt relief following their removal by simple incision.

CASE IV.—In 1655, Antoine Staltender, surgeon, was called, at Dantzic, to see a patient suffering for some months past from severe pain under the tongue. He ordered emollient and discutient gargles, but without giving relief. Then, perceiving a hardness under this organ, he made an incision, and removed a calculus as large as a medium-sized olive, after which the parts readily returned to their normal condition.

The same surgeon, in 1662, removed, by a similar operation, an ash-colored calculus of the same size, from under the tongue of a woman, who for a long time had been subject to periodical attacks of pain, in consequence of its presence. Anodynes and emollients had given only temporary relief, but the incision was followed by a permanent cure.

The following instructive case is from the Philosophical Transactions of the Royal Society of London.

CASE V.—The subject of this case noticed for the first time after a sea-voyage, in which he suffered much from exposure to extreme cold, a small node under the tongue, which, during eight years, gradually increased in size and painfulness. After eating or drinking, the glands of the mouth and throat would often swell suddenly; at last the tumor disappeared. In August he was seized with vertigo; sudden tumefaction took place in the seat of the concealed calculus, and a purulent dis-

charge from the duct of Wharton. This discharge all at once ceased, and inflammation took place, very painful and threatening suffocation, and causing for five days an inordinate ptyalism. On the first day the saliva was thin and limpid; on the second, frothy and saline; on the third, very viscid; on the fourth, insipid, cold and slightly frothy, causing viscid accumulations on the teeth, which made them adhere almost as if glued together.

An incision was made, and a rough calculus, about the size of a horse bean, was removed. It was of light weight, of a bluish complexion, and covered with a grass-colored matter, in consistence resembling sandstone. The disease seems to have had its origin in an intemperate action of the ranular vessels, and to partake of the nature of atheroma; we call it, therefore, an atheromatous calculous concretion.

I should rather say it was atheroma complicated with calculus; the former disease, when it takes on an indurated form, changes both its character and name. The following, from Leautaud, is unlike any other case I have ever seen.

In 1752, I was sent for to see a man at Tarascom, aged thirty-seven, who suffered from excruciating pain, profuse ptyalism, and a constant burning fever, all proceeding from a swollen tongue. Repeated venesection was of no service; at last Mons. L., with the advice of the physician of the house, made an incision into the tongue, and with his two fingers drew out a calculus as large as a pigeon's egg, greyish without, milk-white within, and very friable. Instant relief was given, and a cure soon followed, under the use of proper gargles.

CASE VII.—In September, 1677, a man of thin habit, aged fifty, had a febrile attack preceded by chill. It increased for four or five days, and the tongue became suddenly dark and swollen. He went to a barber to be bled under the tongue; when the vein was opened a small live worm escaped, and afterwards a second one, smaller and resembling a caterpillar. The patient recovered without further treatment. We know neither the cause of these anomalies, nor the distinctive signs

denoting their existence; perhaps a careful consideration of the state of the patient at the time may furnish some useful inferences for practice.

CHAPTER FIFTEENTH.

HEMORRHAGE.

§ 1.—*Hemorrhage from the Tongue.*

LINGUAL hemorrhage results not alone from surgical operations upon this organ, but also from injuries, from a varicose state of the vessels, from local plethora or determination of blood, from vicarious or metastatic action, lastly from a vitiated or attenuated condition of the blood, dependent on constitutional causes.

Manget gives a case of severe hemorrhage, requiring the use of sutures, which was caused by the teeth during an epileptic fit. Also another case, in which a tongue, subject to periodic enlargement, was wounded by the teeth, so as to cause much loss of blood.

Felix Plater gives also a case of hemorrhage of the tongue, from injury inflicted by the teeth during epilepsy, upon the sublingual veins. It continued for two days, threatening the death of the patient, and was at last arrested by Mons. P's father, a surgeon of great reputation, by means of a ball of wool dipped in a powerful and corrosive astringent. The action of this astringent resembles that of the cautery, and is effectual unless secondary hemorrhage should occur after the separation of the eschar, as will sometimes happen. In ordinary cases, a less active styptic will suffice. Ligature is sometimes preferred.

CASE.—I was applied to by a person who had an ulcer on the right side of the tongue, of three months' standing, which he had vainly tried to cure, and which, from its obstinacy, had been suspected to arise from syphilitic or cancerous taint. One day while at dinner he felt acute pain in the seat of the ulcer,

and instantly his mouth filled with blood. Lint dipped in a styptic wash was applied, but the least motion of the jaws deranged it, and caused a renewal of the bleeding. I found the hemorrhage to proceed from the mechanical action of several sharp and jagged stumps of teeth. These I extracted, applied styptic and absorbent dressings, and ordered perfect quiet. In five days I removed these, and directed detergent gargles, under the use of which the ulcer was speedily healed.

§ 2.—*Hemorrhage from the Extraction of Teeth.*

The teeth are supplied with arteries, nerves and veins, so small, however, as not to be very evident to the naked eye in the dead tooth, but their presence is proved undeniably in the living organ when it becomes the seat of pulsating and acute odontalgia. Another evidence is the frequent occurrence of continued hemorrhage after the extraction of one of these organs. Heister, Plater, Zacutus and many others have given cases of severe hemorrhage from this cause, proving in not a few instances fatal. In attempting to explain such cases we must consider the constitution and habits of the patient, and perhaps also some peculiarity of arrangement in the roots of the teeth or the dental arteries.

Stalpar, Wanderviel, Tulpius, Helwigius and Plater give cases* of severe dental hemorrhage; the first and last proving fatal, and the two first occurring in persons of intemperate habits. Plater, in speaking of the last case, doubts if death may not have been caused by the affection of the head which came on shortly before death; but this we more properly regard as only one of the effects of the fatal loss of blood.

The propriety of using the cautery for the suppression of this form of hemorrhage is doubtful; the separation of the eschar may be followed by a recurrence of the bleeding. Compression we regard as by far the best and most effectual means, nor is it necessary to this end that the whole mouth should be stuffed

* Cases 1, 2 and 3, given without detail by Jourdain, and therefore not thrown under separate headings.—*Tr.*

with lint. We shall give, as we proceed, other methods, as adapted to the particular cases.

CASE IV.—Some years since M. Masson, surgeon, sent me a lady, aged thirty-six, with a hemorrhage from around the neck of a first lower molar on the right side. The gum had parted from the tooth around its entire circumference. The better to apply compression—since styptics were ineffectual—I deemed it advisable to extract the tooth. I then filled the socket with lint dipped in a vitriol solution, and applied over this a wedge of cork, fitted carefully between the teeth on either side, and secured by means of a silk ligature from all chance of slipping. The advantage of the cork is, that while it effectually answers its purpose as a compress, it offers no hindrance to the ordinary functions of the mouth, and may therefore be retained several days, or as long as may be thought necessary. When a portion of alveolus is broken away in the operation of extraction, I shape the cork wedge so that it may be fitted to the part broken, and thus prevent blood from escaping at this point.

CASE V.—In 1763, I met just such a hemorrhage around the necks of the four lower incisors, in an old lady. I extracted the teeth, filled each socket with lint, as above, and inserted a piece of cork between the cuspidati, and thus at once arrested the hemorrhage which had given so much trouble and anxiety. The third day I removed the compress and lint.

CASE VI.—By a precisely similar contrivance, I cured an obstinate hemorrhage, which proceeded from around the neck of a loosened canine tooth, in a Mr. Oris, fan-maker. It had lasted for five days, resisting every species of astringent gargle. Sometimes these bloody discharges pursue a different route, as in—

CASE VII.—In 1770, M. Coquerelle, merchant, consulted me about a bloody tumor on the gum, near a second incisor, the crown of which was lost by caries. This tumor filled and discharged, from time to time, about four ounces of blood—at first three or four times a year, then monthly, then daily, and at last several times a day, until the patient became alarmed.

Vitriol, caustic, &c., had been of no service. I extracted the root of the incisor, which at once relieved the tumor of blood; I then used the compress, as in the above cases, and there was no recurrence of the tumor.

These cases will serve to show the advantages of compression, which I regard superior to all other methods, excepting, in particular cases, the ligature. The usual causes of these hemorrhages are rupture, laceration or section of the artery; increased circulation from intemperance, passion or exercise; or a scorbutic taint, giving rise to thinness and deficient coagulating power of the blood. They are sometimes aggravated by the use of acrid and corrosive applications after the extraction of teeth under the mistaken idea of closing up and giving tone to the gum.

CASE VIII.—1770, a butcher had a first lower molar extracted; the bleeding stopped that same day; but five days after, while drinking wine with his companions, hemorrhage took place. I saw him four hours afterwards, the hemorrhage still continuing, and at once applied my compress as above described, which I permitted to remain for eight days.

CASE IX.—Some years ago I was called to extract a tooth from a candidate in one of the large nunneries. The operation was easy and simple. But on the third day a messenger was sent in haste to say that an alarming hemorrhage had taken place; it had commenced that morning, and was at first very slight. She had used, in this interval, gargles of vulnerary water and of brandy, and chewed the leaves of cochlearia, with the view of healing the gum more rapidly: the effect was seen in the generally inflamed state of the mouth. I applied the compress as above, retaining it for eight days, and meanwhile using emollient gargles to correct the irritable condition of the mouth. Such emollient treatment, following judicious compression, is in many cases much more efficient than the usual method of styptics or astringents, which, under these circumstances, serve rather to irritate and inflame; and sometimes venesection and other depleting means are requisite to control the inflamed state of the system attending certain hemorrhages.

CASE X.—In 1764, a tailor's apprentice had a first upper molar extracted by a barber. To stop the continuous bleeding the barber inserted a piece of blue vitriol, and covered it with lint and compress; but on the fifth day the bleeding was renewed after the separation of the eschar. Cautery was now applied, and repeated seven times in the course of fourteen days, the patient becoming daily weaker from loss of blood. He was sent to me by some persons who took pity upon his sad condition. I removed the mass of dressings from his mouth, which were nearly suffocating him, and found that the gum and a part of the maxillary bone were destroyed, by the violent measures used. I carefully cleansed the wound, and then gradually applied medicated pledgets, securing the whole by a piece of cork, which I fastened by ligatures to the adjacent teeth, and shaped so as to press upon the point where the maxilla was destroyed. When the patient left, the blood had ceased to flow. In five days I removed the cork and renewed the dressings; suppuration had commenced and the wound was granulating well. I continued these dressings till the sixteenth day, each time replacing the cork compress; after this I dismissed the case, with directions to avoid solid food and to use slightly stimulant and astringent gargles several times every day. In about a month's time he came back to me with his mouth in a perfectly healthy condition.

Even in cases where the cautery is thought necessary, compression should not be neglected. There are those who regard the clot of blood which forms in the socket as a sort of natural tampon for the arrest of the hemorrhage, and argue thence against the necessity of compression; but I must confess I cannot yield homage to this new-fangled physiology. Others assert that compression tends to enlarge the socket, and in this way increase the liability to hemorrhage: such a result cannot happen unless the compression is made with an unduly hard substance, and in an improper manner. But the cases above cited are, I think, sufficient to establish the judiciousness of this practice; any further arguments, therefore, will prove unnecessary and wearisome.

CHAPTER SIXTEENTH.

DIFFICULT DENTITION.

I PASS over the consideration of the many serious accidents frequently attending dentition in infants—accidents often beyond the resources of art, and the occasion of acute suffering to these tender victims. The cause universally assigned for this difficulty in the eruption of the teeth is the resistance offered by the gum. Doubtless this is, in part, and in some cases altogether the cause; but if it were the only one, then relief should invariably follow the operation, so common, of lancing the gum; this, however, we all know is often unattended by any permanent or even temporary relief. Careful examination has convinced us that a more serious impediment to the progress of the teeth is from overlapping portions of the alveolus, which hold the crown of the tooth as a diamond is grasped by its setting. This portion of alveolus must be cut away. I have, in many instances, saved life by so doing; nor should anxious mothers dread the operation, for it is little, if at all, more painful than the common one of lancing the gum, and attended with no more danger.

Scultet gives the case, (CASE I,) of an infant, aged thirteen months; who died with all the symptoms of cerebral apoplexy from difficult dentition. He wished, four days before death, to apply the actual cautery to the back of the head, but the parents would not consent. Manget, Parè, Vesal and others, speak of the convulsions, languor, fever, &c., attending the teething of infants, and recommend the operation of lancing the gum. Fontanus and others allude to the frequent trouble attending the eruption of the *dentes sapientiæ*, which takes place usually between the ages of twenty and twenty-five or

thirty, but is occasionally delayed till forty, fifty, or even sixty years; as the age advances, the greater difficulty is to be apprehended. Where the gum or other soft parts alone resist the egress of the tooth, the simple use of the lancet will usually suffice. This was the case in a Neapolitan, aged twenty-five, the true cause of whose sufferings were for a long time unsuspected, until, by the use of the lancet, I gave relief, and brought the tooth to view. The bone itself offers a more serious obstacle, from its own incomplete development, or its too great density, or from some malposition of the tooth-germ. From these causes we have these teeth presenting their crowns laterally to either side, or vertically forward, instead of in their normal horizontal position; and sometimes they never are erupted, but lie, fully or partially formed, in the maxillary bone. The roots of these teeth, from the same causes, deviate often from their true position, giving trouble when extraction becomes necessary. The various symptoms which may attend the difficult eruption of the third molares will be best learned from the following cases:

CASE II.—In 1768, Mons. Masson, surgeon, sent for me to see a lady, twenty-five years old, whose left cheek was greatly swollen, red and painful near the posterior angle of the jaw. Venesection, diet and poultices had all been judiciously resorted to, but without relief. Mons. M., rightly conjecturing the true source of all the trouble, had decided upon the extraction of the wisdom tooth, and wished me to perform the operation. This I did by means of an elevator, for the mouth was so swollen as not to admit of the introduction of the pelican. Relief was instantaneous, much pus escaped through the socket, and all the unpleasant symptoms gradually disappeared.

CASE III.—In 1769, a lady, aged thirty-two, consulted me for the cure of a fistula near the left posterior angle of the lower jaw, with which she had been annoyed for the last three years. There had been frequent attacks of inflammation, and the gum over the third molar had been repeatedly lanced; but nevertheless fistula resulted. Cautery had been used, and with seeming benefit; but in six weeks the wound reopened, and a

fungous growth appeared. This had been destroyed by red-lead, and for three or four months the parts were quiet; but again the fistula opened. In May, 1769, the cheek was much swollen and painful, and a fistula existed with inverted fungous edges. I was convinced that these symptoms were occasioned by a diseased dens sapientiæ, confined in the jaw by a constricting alveolus. With the consent of the patient I proceeded to give relief, by first excising the gum from over the tooth in question. I found it discolored, and the alveolus around it softened. I passed a curved elevator carefully around the tooth, gradually loosened, and at last removed it entire. The crown was carious, the root eroded, and the pulp cavity filled with a dark and very offensive matter. The alveolus had lost its periosteum, and the socket communicated with the external fistula. The remaining treatment was conducted according to the directions which I have fully laid down in previous chapters on the subject of fistulas, and the cure was completed towards the end of the seventh week, without any untoward accident, and the patient returned to her family in Picardy.

CASE IV.—In 1774, the servant of a merchant, aged twenty-five, consulted me for a large tumor, extending from the left angle of the lower jaw to the symphysis. The skin was of its natural color, and the tumor resembled an exostosis. The gums on that side were soft, tumid, and covered with a viscid fetid humor. The dens sapientiæ looked outwards, and had, by its irregular growth, thrown the second molar inwards towards the tongue. To this irregularity, and the consequent irritation of the parts, I attributed the disease. There was a purulent fistula behind the third molar, and another between the first and second. I removed the third molar, which offered but slight resistance, and also a loosened portion of the alveolar septum. Much pus of a very offensive character escaped, but as the parts did not seem altogether relieved, I extracted the second molar likewise, with another portion of alveolus. Again there was a free discharge, and I then applied suitable dressings. A fungus appeared in a few days in the sockets, which I thought due to the lesion of the periosteum, since the bone felt firm and sound under the probe.

I next laid open a sinus which extended forward to the canine tooth. Carious fragments of bone were from time to time detached; also several fungous masses. A considerable void was thus formed, and my efforts were directed to the prevention of further loss of substance. For six weeks I applied pledgets dipped in a digestive made of balsam of Arcæus, yelk of egg, and a little balsam of Fivraventi, touching the fungus carefully with mercurial water, applying compressing and expulsive bandages, and using soothing injections. The parts began to assume a healthy action, and suppurated well. During the next six weeks I omitted the balsam of Arcæus, as being too relaxing, and substituted a little red precipitate. Under this treatment, slightly modified according to circumstances, the patient improved slowly but surely, and at the end of three months was quite cured. A proper diet was, during this time, observed, and due attention paid to the regulation of the bowels. I saw her some months afterwards, and the bone had regained its natural shape and appearance.

CASE V.—In the same year, an architect, aged twenty-eight, came to me with a hard and very painful tumor near the right angle of the jaw. He could scarcely open his mouth, had constant head-ache, fever and pain in the ear. Depletion, diet, poultices, &c., had all been resorted to, but without benefit. I examined the mouth, with the aid of a wax taper and stylet, as carefully as possible; found the wisdom tooth covered by the gum, and perceived fluctuation between the gum and cheek. With a curved bistoury I made an incision along the outside of the alveolus, from the first bicuspid to the wisdom tooth. Matter was discharged, and some relief given. I next extracted the first bicuspid, giving additional relief; but the symptoms returned with greater severity, and the incision closed. I reopened it with better success, and when the patient was able to separate the jaws a little more, I lanced the gum over the third molar. This tooth then gradually emerged, but inasmuch as the swelling and some other symptoms still persisted, I persuaded him to have it extracted. The issue proved the excellence of my advice, for after that he experienced not the slightest annoyance.

CASE VI.—In 1776, an individual applied to me for the cure of a considerable tumor at the right angle of the jaw. The mouth could scarcely be opened. On introducing a curved stylet, I detected a fistulous fungus over the dens sapientiæ, into which I could thrust my probe, passing it to the outside of the tooth. When I drew it out it was loaded with a highly offensive matter. I then, with a gum lancet, made a free incision into this place, aided the discharge of pus by gentle compression, and applied emollient poultices. When the mouth could be sufficiently opened, I cut away the fungous gum and extracted the wisdom tooth. In the same way I have successfully treated many similar cases.

CASE VII.—In 1776, an individual, about thirty-six years old, applied to me. He had, some months previously, suffered with alveolar abscess, which was relieved by spontaneous discharge. Subsequently a swelling appeared, with violent pain in the jaws, throat, temple and ear. All remedies tried could give no relief. At last an attempt was made to extract the third molar, which was just protruding above the gum, and supposed to be the cause of the trouble. The operator broke off the crown, and the patient's sufferings became worse than before. With the finger I detected fluctuation, and at once made an incision with a curved bistoury, from the third molar to the first bicuspid, giving vent to a quantity of bloody and very fetid pus. I kept the incision open by a tent, and used injections for some days. On the third day I was able to examine the wisdom tooth and extract it with M. Lecluze's elevator: after this the parts returned to their natural condition.

CASE VIII.—In 1775, I examined, together with Mons. Laborde, the mouth of a lady fifty years old. The first two molares were lost, also the first bicuspid, and over the site of the third molar was a very painful ulcer, which Mons. L. had treated with gargles, destroying its fungous edges with lunar caustic. At the bottom of this ulcer was a hard white substance, but the age of the patient prevented the suspicion that it might be the wisdom tooth. Such, however, on closer examination, it proved in truth to be. I cut away the alveolus

from around it, and succeeded at last in its extraction. It resembled in size and shape a bicuspid, with its roots turned up towards the coronoid process. After its removal the patient had no further annoyance.

CASE IX.—In 1776, a person sixty years old, who had for a long time felt acute pain in the lower jaw, in the neck, and behind the ear, which prevented him from sleep, sent to get my advice upon his case. Dental caries could not be the cause, for he had scarcely a tooth in his head; but on close examination I perceived a hard, solid, white point at the place where the dens sapientiæ is usually erupted. I without hesitation attributed the symptoms to the difficult dentition of this tooth, but my patient was somewhat incredulous, and would not at first yield to my plan of treatment. He afterwards became convinced of the correctness of my diagnosis, and I proceeded to operate. I first cut away the gum, and then, with a gouge, removed that portion of alveolus which hindered the egress of the tooth. The operation was not painful, and the symptoms above detailed soon completely disappeared. The operation is one which, in the hands of a careful and skilful surgeon, is attended with not the slightest danger.

In fine—and the remark will apply throughout the whole of this work—the resources of surgery are not so limited as some would have us to believe. For its successful practice, however, it is not sufficient that we be surgeons in name only: we must be faithful and diligent students, and especially diligent in the study of this essential branch of the healing art—the Surgery of the Mouth.

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PHYSICIAN TO THE SUFFOLK GENERAL HOSPITAL.

ASSISTED BY

W. A. GUY, M. D., Professor of Medical Jurisprudence, King's College, London,
G. DAY, M. D., Lecturer on Materia Medica at the Middlesex Hospital Medical School,
HENRY ANCELL, M. D., Lecturer on Medical Jurisprudence, &c., &c.,
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